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ECONOMIC, SOCIAL AND ENVIRONMENTAL PROFILE: INNER SOUTH EAST

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PREPARED FOR:
INFRASTRUCTURE VICTORIA

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ABBREVIATIONS

Abbreviation	Description
AAGR	Average annual growth rate
ABS	Australian Bureau of Statistics
ACSC	Ambulatory Care Sensitive Conditions
AEDC	Australian Early Development Census
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ARI	Annual Recurrence Interval
ASR	Age Standardised Rate
BMO	Bushfire Management Overlay
CBD	Central Business District
CMA	Catchment Management Authority
DBSCAN	Density-based spatial clustering of applications with noise
DEDJTR	Department of Economic Development, Jobs, Transport and Resources
DELWP	Department of Environment, Land, Water and Planning
DHHS	Department of Health and Human Services
DOTE	Dropping off the Edge (Jesuit Social Services Report)
DPH	Density Per Hectare
EJD	Economic Jobs Density
EPA	Environmental Protection Agency
ESE	Economic, Social and Environmental
FER	Functional Economic Region
GP	General Practitioner (Medical doctor)
GRP	Gross Regional Product
GVA	Gross Value Added
HA	Hectare
HACC	Home and Community Care Services
HEX	SGS 30-hectare grid model
IT	Information Technology
IV	Infrastructure Victoria
LGA	Local Government Area
LQ	Location Quotient
MAC	Metropolitan Activity Centre
MVCC	Moonee Valley City Council
NEIC	National Economic and Innovation Cluster
NIEIR	National Institute of Economic and industry Research
POW	Place of Work
PSP	Precinct Structure Plan
PTV	Public Transport Victoria
PUR	Place of Usual Residence
SA	Statistical Area
SEIFA	Social and Economic Index for Areas
SSIP	State Significant Industrial Precinct
UGB	Urban Growth Boundary
VIF	Victoria in Future Report
VLUIS	Victorian Land Use Information System
VPA	Victorian Planning Authority
WHO	World Health Organisation
WTP	Water Treatment Plant

EXECUTIVE SUMMARY

Context

Infrastructure Victoria (IV) is building its understanding of the regional and local trends that influence metropolitan Melbourne's regions. This will:

- inform the 2020 update of the 30-year infrastructure strategy, including IV's ability to spatially target infrastructure investment
- build on the analysis of regional Victoria completed earlier in 2018.

This **Inner South East Metro Region Economic, Social and Environmental** (ESE) report is one of six for each region of Melbourne, supported by an Inter-regional ESE report and a Functional Economic Region (FER) Report that looks beyond administrative boundaries to analyse how Melbourne, as a whole, functions as an economic region.

REPORT PACKAGE

This ESE looks at overarching drivers of change and how they affect the Inner South East Metro Region. It measures performance against a range of indicators at varying geographic scales and identifies the key characteristics, trends, challenges and opportunities within and across the region. It does not investigate or provide recommendations on investments or solutions to address these matters.

Inner South East Metro Region

The Inner South East Metro Region comprises four local government areas (LGAs): Boroondara, Stonnington, Glen Eira and Bayside (see context map below). The region reaches from Kew in the east to the beaches of Brighton in the south.

INNER SOUTH EAST METRO REGION CONTEXT MAP

Inner South East Metro Region Summary

HEADLINE STATISTICS		
	Number	%
Population	540,000	100%
0-14	92,000	17%
15-39	193,000	36%
40-64	170,000	31%
65+	85,000	16%
Jobs	222,000	100%
Knowledge	59,000	27%
HealthEdu	66,000	30%
Population	79,000	36%
Industrial	18,000	8%
Land (ha)	34,000	100%
Residential	12,000	35%
Employment	1,000	3%
Park/Rural	19,000	56%
Other	2,000	6%

Attributes

- The Inner South East Metro region has a highly skilled and well-educated white-collar workforce. People mainly work in population-serving, health and education, and knowledge-intensive jobs. Key jobs in these sectors are in retail trade; rental, hiring and real estate; health care and social assistance; and education and training.
- The development profile is predominantly residential, with retail clusters in areas such Prahran/South Yarra, Hawthorn-Glenferrie Road, Camberwell Junction and Malvern/Armadale also functioning as employment clusters, reflecting the long-term popularity of the Inner South East Metro Region as a place to live.
- Parts of the region are experiencing infill development, with new flats and townhouses being built in established urban areas such as Prahran/South Yarra, Caulfield, Carnegie and Glen Iris. For example, 9,000 flats and townhouses/terraces were built in the City of Stonnington between 2011 and 2016. The increased dwelling diversity reflects the needs of younger adults and people seeking to downsize locally from family homes as they age. An increase in the construction of residential aged care facilities is also occurring in line with this trend in metropolitan Melbourne.
- Median house prices increased significantly between 2011 and 2017, with the steepest growth rate in the City of Bayside for units/townhouses. The median house price increased to over $2 million in the cities of Boroondara and Stonnington over the same period. The proportion of people facing rental or mortgage stress in the region is lower (in both cases) than the State and metropolitan average, revealing the comparative affluence of the region.
- The public transport network is well integrated, with an extensive network of train, bus and tram routes across most of the region. Coverage is lower in the City of Bayside and towards the eastern fringe, both in terms of the network and a lower rate of hourly services. Like other parts of metropolitan Melbourne, fixed rail services are focused towards the Central City, while inter-LGA connections are less frequent and less physically extensive.
- The landscape is dissected by the Yarra River corridor, one of metropolitan Melbourne's most culturally significant and important environmental features. The Yarra River forms a natural boundary between the cities of Stonnington and Boroondara. The region also features over 17 kilometres of coastline in the City of Bayside, and many heritage-listed structures, parks and gardens.
- Key tourist destinations include Studley Park Boathouse, Ripponlea Estate, Como House, the Jewish Holocaust Centre, Lyon Housemuseum, Justin Art House Museum, Gardiner's Creek Trail and parks and gardens such as Victoria Gardens, Canterbury Gardens, Caulfield Park and Wattle Park.

Strengths

- A growing, diverse and skilled population
- A growing number of young people aged 15 to 29
- Low unemployment rate (3.5 per cent – 2.4 points lower than the metropolitan Melbourne average) and low levels of youth unemployment
- Inner areas with a diversifying economy and ongoing capacity to support high skill, creative, knowledge-intensive sectors
- Proximity to the Central City
- Access to a diverse range of open space in residential areas, as well as the Yarra River corridor and the Bayside foreshore
- High effective job density (EJD)
- Good public transport network and options
- Major universities and hospitals
- Thriving economic locations such as Prahran/South Yarra and Hawthorn

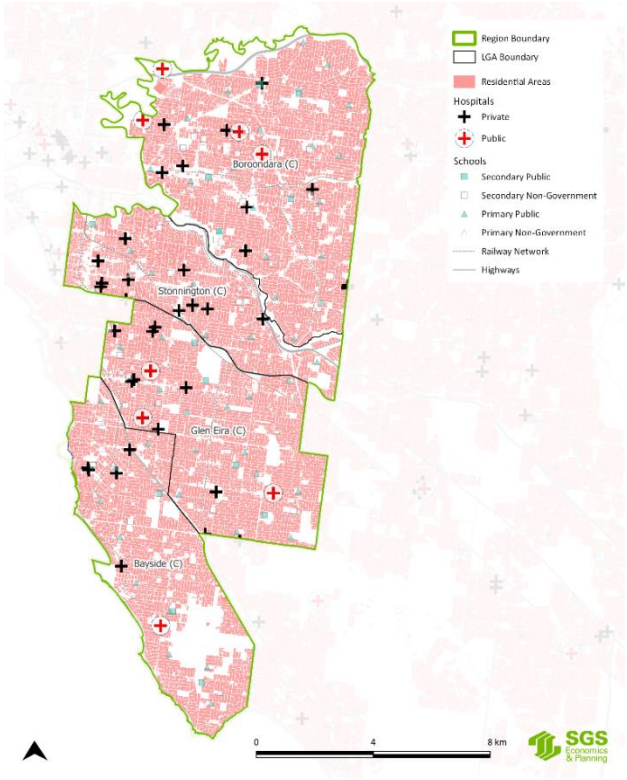
Challenges

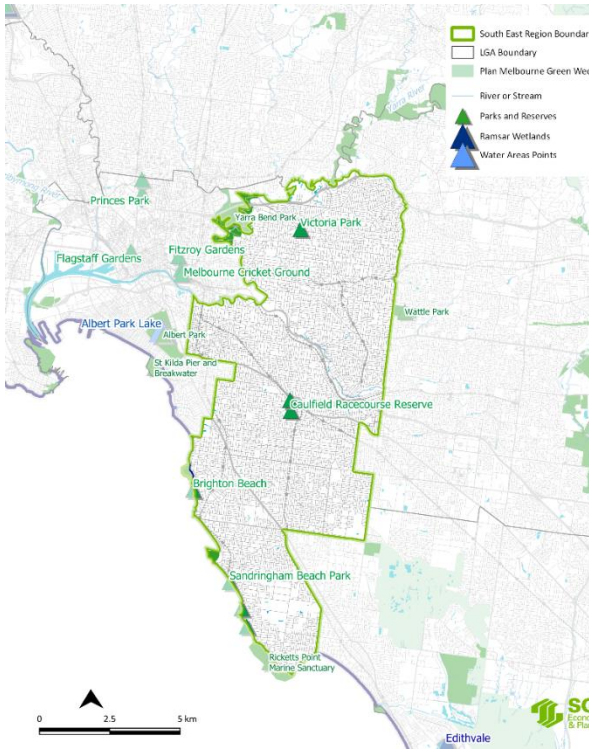
- Higher than average (and increasing) median house prices, particularly in inner areas
- Lack of affordable housing choice
- Changing community needs with more people living in apartments, an older population and an increase in single-person households
- Hazard risks such as sea level rise and heat vulnerability
- Maintaining the health of key rivers and the bay
- Forecast population growth rates that are lower than metropolitan Melbourne's average

Insights

- Highly educated and skilled workforce may be more resilient to industry sector shifts in the future
- Greater youth engagement and growing tertiary education rate allows for uplift of skills
- Concentration of population-serving and health and education sectors will build resilience to demographic change
- Density and networking of centres (19 major activity centres in one of metropolitan Melbourne's smallest regions) presents opportunities for more resilient and connected places
- High tree canopy coverage and access to diverse open space may mitigate urban heat islands effect
- Lack of affordable housing may mean fewer housing options for lower income households and key workers such as retail workers or nurses

URBAN, ECONOMIC AND ENVIRONMENTAL STRUCTURE





Inner South East Metro Region Economic, Social and Environmental profile summary

Indicator	Likely impact of drivers of change	Description
ECONOMIC		
Economic performance	Favourable	The cities of Stonnington and Boroondara experienced the highest levels of employment growth over the last 20 years. Population-serving industries were the largest employer in the region, with the health and education sector experiencing the highest growth in business formation in the region. This includes education income from international students. Business formation in the knowledge-intensive sector experienced strong growth from 2009 to 2017. Prahran/South Yarra is the economic location with the most jobs in the region, with 42 per cent of these in population-serving industries and 41 per cent in knowledge-intensive industries. The other three economic locations in the region are Camberwell Junction, where the knowledge-intensive industry is dominant with 42 per cent of jobs; Hawthorn-Glenferrie, Road where the health and education industry accounts for 38 per cent of jobs; and Malvern/Armadale where 48 per cent of jobs are in health and education. Effective job density (EJD) is high, with a high employment density, proximity to adjoining Inner Metro Region job clusters and strong public/private transport connections. The outer areas of Bayside and Glen Eira LGAs have slightly lower EJD to the rest of the region. Capital investment grew across the region between 1996 and 2016, with the highest levels of capital investment in the City of Boroondara. The region has experienced strong job growth and residential development over the same period. Boroondara LGA has the highest international exports of the region.
Economic wellbeing	Favourable	The region has higher household income than metropolitan Melbourne and Victoria. The City of Stonnington had the highest equivalised income in 2016 with household income lower in the City of Glen Eira than other LGAs in the region. City of Bayside experienced the greatest increase in household income over the last five years. The unemployment rate increased in all LGAs, in line with broader trends across Victoria. Unemployment rates were well below those of metropolitan Melbourne and Victoria. A strong public transport network is in place. Rail lines are supported by a network of trams and buses.

Indicator	Likely impact of drivers of change	Description
Employment and skills	Favourable	The Inner South East Metro Region has a highly skilled resident workforce, with an average 63 per cent Skill Level 1 or 2 attainment across all LGAs, where 1 is highest skill level and 5 is lowest skill level in 2016. This is far above the Victorian and metropolitan Melbourne averages. The proportion of people with Skill Level 3 or 4 attainment aligns with the metropolitan and State averages, while the key regional difference is a lower proportion of people with Skill Level 5 qualifications. The strongest sectors in the region are retail trade; rental, hiring and real estate services; professional, scientific and technical services; health care and social assistance; education and training; and accommodation and food services. The sectors that underwent noticeable growth were transport, postal and warehousing; retail trade; information media and telecommunications (largest increase); and health care and social assistance.
SOCIAL		
Population demographics	Favourable	Except for the City of Stonnington, population growth was well below that of metropolitan Melbourne and Victoria. Inner areas experienced a higher rate of average annual growth and a greater change in population compared to middle ring areas. City of Bayside has a higher proportion of people aged 65+ than the rest of the region, metropolitan Melbourne and Victoria. City of Stonnington has a higher proportion of young adults than the rest of the region with almost half the population (45 per cent) aged 15-39. The age dependency ratio increased in every LGA in the region, except for the City of Stonnington, which experienced no change between 2011 and 2016. This is in line with trends for Victoria and driven by an ageing population. The age dependency ratio in the City of Bayside is significantly higher than the state average. The region's population is predominantly Australian-born with concentrations of migrants in certain areas. City of Glen Eira appears to be a little more diverse, with the greatest density of residents born in Southern and Central Asia and Sub-Saharan Africa.
Housing diversity	-	The region has a more diverse housing typology than metropolitan Melbourne and Victoria. Between 2011 and 2016 the share of separate houses fell in all LGAs in contrast to metropolitan Melbourne and Victoria. All areas experienced an increase in the number of flats, townhouses or terraces. Separate house remains the dominant dwelling type in every LGA, except the City of Stonnington where flats account for over half of all dwellings. Stonnington LGA saw a 31 per cent increase in flats and 32 per cent increase in townhouse/terrace dwellings between 2011 and 2016. City of Bayside has significantly fewer flats than other LGAs.

Indicator	Likely impact of drivers of change	Description
Housing stress	Adverse	Rates of mortgage stress were lower across the region than for metropolitan Melbourne and Victoria. Rental stress increased in all LGAs between 2011 and 2016 – significantly so in Stonnington and Boroondara LGAs. The proportions of households in rental stress were lower than metropolitan Melbourne and Victoria. City of Glen Eira had the greatest proportion of households in rental stress in 2011 and in 2016, with more than 25 per cent of households in rental stress. Remaining LGAs had more than 20 per cent of households in rental stress.
Disadvantage	Favourable	Most of the region is 'advantaged' to 'most advantaged'. There are small areas of extreme disadvantage in the in all LGAs; this may reflect the locations of social housing, as is the case in the City of Stonnington with the social housing towers in Prahran.
Youth engagement	Favourable	All LGAs have higher proportions of people aged 20-24 with Year 12 or higher qualification than the metropolitan Melbourne average. More than 90 per cent of residents aged 20-24 have a Year 12 or higher qualification in each LGA. Most Year 12 completers in the region went on to tertiary education and at higher levels than the Victorian average.
Population health	Favourable	Residents within the Inner South East Metro Region had higher levels of access to community services and resources than metropolitan Melbourne. The number of general practitioners (GPs) per 1,000 population was higher in all LGAs than for metropolitan Melbourne and Victoria. All LGAs have lower numbers of mental health clients than the Victorian and metropolitan Melbourne average, and similar numbers in all. All LGAs experienced an increase in mental health clients between 2011 and 2015, in line with state and metropolitan trends. Rates of drug and alcohol clients were lower than Victorian and metropolitan Melbourne averages. There was a reduction in drug and alcohol clients between 2011 and 2015 in all LGAs except for the City of Stonnington, which remained the same. The prevalence of Type 2 diabetes is low compared with the metropolitan and Victorian average – all LGAs have similar rates. Life expectancy for females is higher than males, in line with metropolitan Melbourne and Victorian averages. Life expectancy in general is higher than the metropolitan Melbourne and Victorian averages in all LGAs.

Indicator	Likely impact of drivers of change	Description
Early childhood outcomes	Favourable	There is little variation in the number of child protection substantiations across the region, with all LGAs well below the metropolitan Melbourne and Victorian averages. The proportions of developmentally vulnerable children are well below the metropolitan Melbourne and Victorian averages in all LGAs. The percentage of low birth weight babies is consistent, occurring at lower rates than the metropolitan Melbourne and Victoria averages. The proportion of children fully immunised at age two are relatively consistent across the region, and in line with State averages.
Crime	-	City of Stonnington had significantly higher offence rates compared to the rest of the region and higher than those of metropolitan Melbourne and Victoria in 2018. The cities of Glen Eira, Boroondara and Bayside all have lower offence rates compared to metropolitan Melbourne and Victoria.
Wellbeing	Favourable	The cities of Bayside, Boroondara and Stonnington reported similar scores of subjective wellbeing, slightly higher than the Victorian average. The City of Glen Eira reported slightly lower scores of subjective wellbeing. All LGAs reported higher scores for the sense of safety walking alone after dark index than the metropolitan Melbourne and Victorian average. Within the region, the City of Glen Eira had the lowest score of all the LGAs and the City of Boroondara had the highest. All LGAs experienced an increase in the volunteering rate between 2011 and 2016. Volunteering rates were higher than the metropolitan Melbourne and Victorian average.
ENVIRONMENTAL		
Environmental assets	Adverse	The City of Boroondara has the largest total area of open space in the region and City of Stonnington has the smallest. The region has the least amount of open space of all the metropolitan Melbourne, with Stonnington and Glen Eira LGAs among the lowest ranked LGAs in metropolitan Melbourne in terms of the ratio of open space to total land area. Open space assets in each LGA are at least half mixed open space. The remaining open space is predominately green space. The highest type of open space in the region is sportsfields and organised recreation. Land use is predominately residential. There are some instances of conservation and parks, and commercial land.
Environmental condition	Adverse	All LGAs are above the metropolitan average for tree canopy cover. The cities of Boroondara and Stonnington are the sixth and tenth highest LGAs when it comes to tree canopy coverage in metropolitan Melbourne. There are a low proportion of river reaches (section of river between a beginning and ending point) in the region that are in good/excellent condition. The proportion of river reaches in good/excellent condition is larger in the Yarra River Basin than the metropolitan average. The percentage of reaches in good/excellent condition is decreasing over time. Port Phillip Bay is healthy, with some examples of

Indicator	Likely impact of drivers of change	Description
		poor health. For example, Mordialloc Beach did not meet the recreational water quality objective at the end of the 2016-17 season.
Environmental risks and hazards	Adverse	Areas at risk of flooding during a 1 in 100-year flood event are adjacent to water bodies such as the Yarra River. Very little residential land is at risk. A small area of land in the City of Bayside is at risk of sea level rise and storm surge in Hampton. There is also a small yet significant area of the City Stonnington that is at risk. All LGAs have urban heat islands. Areas in the City of Glen Eira are slightly more affected than other LGAs; however, there is minimal spatial variation. Areas in the City of Glen Eira include populations that are most vulnerable to heat in the region. All LGAs have concentrations of contaminated groundwater. There are a small number of EPA priority sites.
Environmental flows	Adverse	Most populated areas in the region have access to a diverse range of open space types. Residents in the City of Bayside visit green space more than residents in the other LGAs. Despite this, all residents visit green space more than the metropolitan average. Yarra Valley Water and South East Water consider multiple scenarios when forecasting supply and demand of water. In the worst-case scenario, augmentations to the system will be needed to service the region in the next 10-15 years. The LGAs have a low number of small-scale solar installations since 2001. There are no open landfills in the region. Volumes of kerbside garbage are highest in the City of Boroondara. There is a relatively flat trend in the quantity of kerbside garbage over time.

1. INTRODUCTION

To support the update of Infrastructure Victoria's 30-year Infrastructure Strategy, this report overviews the economic, social and environmental characteristics of the Western Metro Region.

1.1 Project purpose

This project will help Infrastructure Victoria to:

'*Prepare for the 2020 Strategy update and provide a rich economic, social and environmental evidence-base at a regional level within metropolitan Melbourne. This will assist IV to understand relative regional strengths and challenges across the metropolitan area and (combined with the existing work done by others) across the state*.'

This report is one of six regional economic, social and environmental (ESE) profiles (see Figure 1) that will "identify the ESE strengths and challenges of Melbourne's regions on a geographical basis."

As well as the six regional profiles, the project also includes:

- a metropolitan **functional economic region (FER) profile**, highlighting the strengths and challenges of metropolitan Melbourne's economy as a network
- a metropolitan **inter-regional summary report** that provides regional indicators against IV's 10 objectives to identify relative strengths and challenges within and across the metropolitan area.

FIGURE 1: REPORT PACKAGE

1.2 Report structure and approach

The report covers ESE domains that reflect Infrastructure Victoria's 10 objectives:

1. Prepare for population change (Social)
2. Foster healthy, safe and inclusive communities (Social)
3. Reduce disadvantage (Social)
4. Enable workforce participation (Economic)
5. Lift productivity (Economic)
6. Drive Victoria's changing globally integrated economy (Economic)
7. Promote sustainable production and consumption (Environmental)
8. Protect and enhance natural environments (Environmental)
9. Advance climate change mitigation and adaption (Environmental)
10. Build resilience to shocks (Environmental, Social and Economic)

The report is structured as follows:

- Chapter 2: The geographies and categories used for the project
- Chapter 3: The major drivers of change that are affecting Australian cities and regions, and which will impact Melbourne's and the Inner South East Metro Region's growth and development
- Chapters 4-6: Economic, social and environmental indicators for the Inner South East Metro Region

1.3 Inner South East Metro Region

The Inner South East Metro Region comprises the inner suburban local government areas (LGAs) of Stonnington, Glen Eira, Boroondara and Bayside.

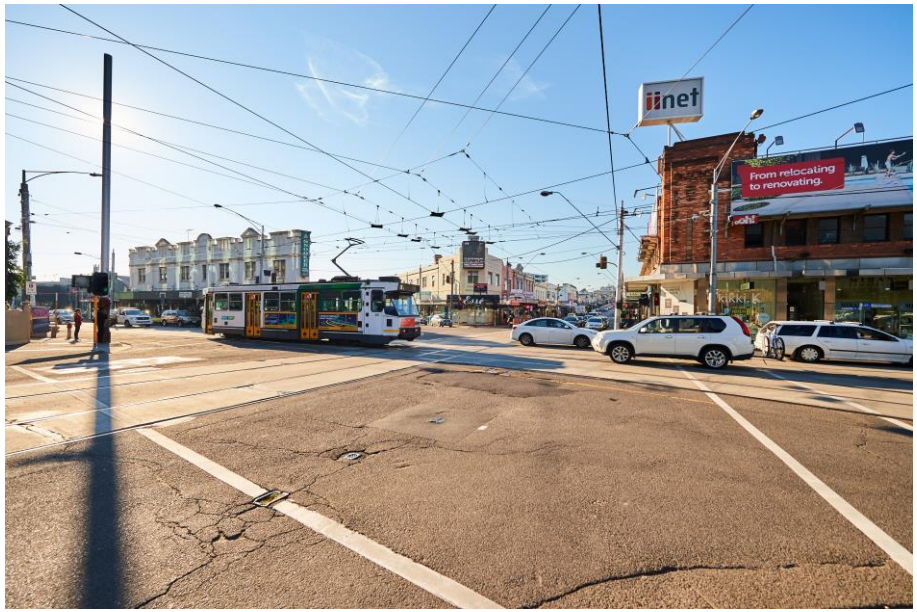
The Inner South East Metro Region reaches from Kew to the beaches of Brighton. The area includes major retail precincts such as Chapel Street, Camberwell Junction, Glenferrie Road and Chadstone, as well as quieter residential areas in its inner and middle suburbs.

Home to more than 540,000 people, the region's suburbs provide a variety of housing, employment and lifestyle opportunities. These range from the region's higher density historic inner suburbs to its more residential post-war suburbs. The region is served by 19 major activity centres that contain retail precincts and concentrations of private, government and community sector jobs and services. They are critical to meeting the local needs of the Inner South East Metro Region's population.

At 16,188 hectares, the Inner South East Metro Region makes up 1.8 per cent of the metropolitan Melbourne Area. Boroondara LGA has the largest population of the region (33 per cent) followed by Glen Eira LGA (28 per cent), Stonnington LGA (21 per cent) and Bayside LGA (19 per cent)

The Inner South East Metro Region is Melbourne's second smallest by area but also one of the most prosperous. It is home to Swinburne University and Monash University (Caulfield). In 2016, the region generated an estimated gross regional product (GRP) of $31.7 billion, approximately 10 per cent of the total GRP of metropolitan Melbourne. Important natural assets include the Yarra River, which defines the northern border of the region, over 17 kilometres of coastline in the City of Bayside, and many heritage-listed structures, parks and gardens. The region also features a rich network of regional and community arts and cultural facilities such as the Monash University Museum of Art, the Bayside Arts and Cultural Centre, Chapel off Chapel and Hawthorn Arts Centre. These assets, combined with the region's proximity to central Melbourne, make the region an exciting and highly liveable place for residents and visitors.

With approximately 12 per cent of Melbourne's population calling the region home, population growth will continue between 2016 and 2021 but at a lower rate than the Melbourne metropolitan average, with expected population growth of approximately seven per cent compared with 12 per cent for all regions.

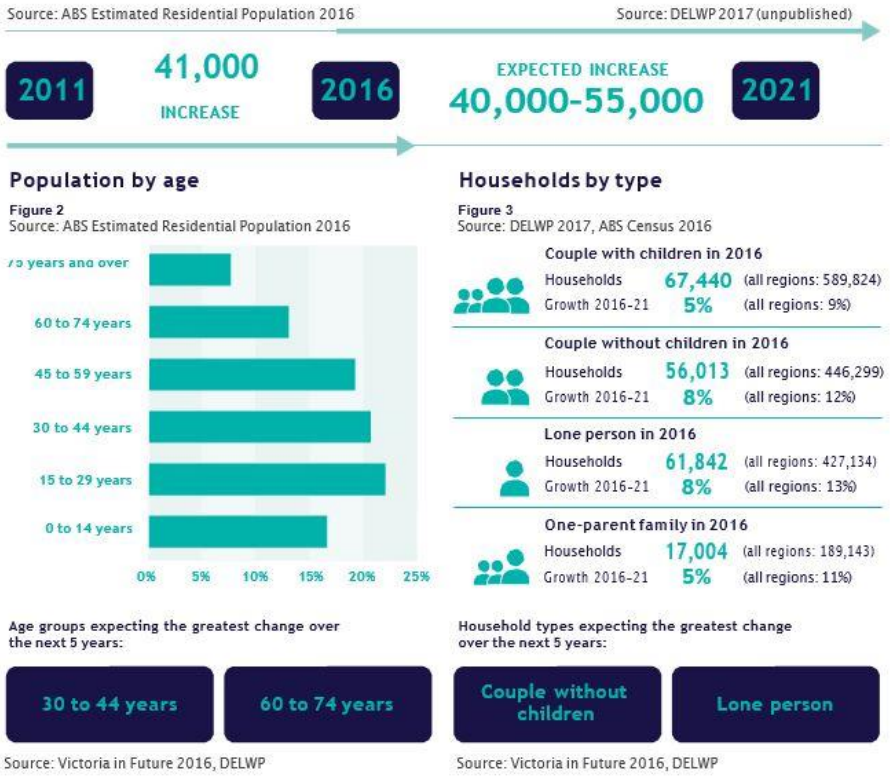


Source: DELWP, 2018.

People aged between 15 and 29 make up the largest share of the population (approximately 22 per cent in 2016). Over the five years to 2021, the 30 to 44 and 60 to 74 age groups are projected to grow faster than other age groups. Couples without children and single-person households are expected to be the fastest growing household types over this period.

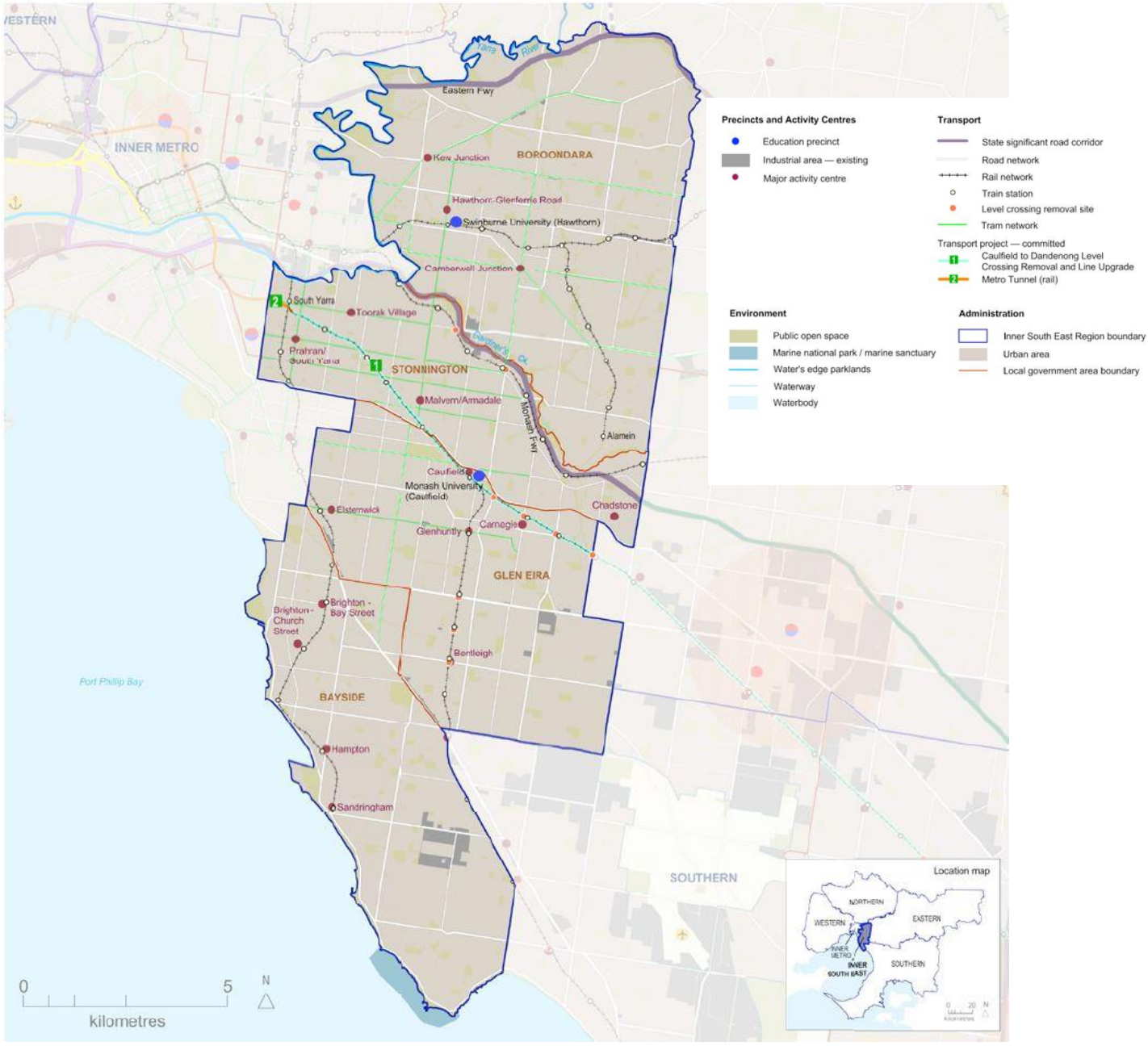
The Inner South East Metro Region contained approximately 213,000 jobs in 2015, 10 per cent of metropolitan Melbourne's jobs. The number of residents who also work in the region is 32 per cent, the lowest of any of Melbourne's regions, and significantly lower than the Melbourne average of 50 per cent. The region benefits from its proximity to the jobs in the Inner Metro Region. In March 2017, the resident unemployment rate in the Inner South East Metro Region was 3.5 per cent, 2.4 percentage points lower than the metropolitan Melbourne average. The unemployment rate in the region has consistently been around 2.1 percentage points lower than the metropolitan Melbourne average since June 2011. There are also relatively low levels of youth unemployment.

FIGURE 2: INNER SOUTH EAST METRO REGION 2016 POPULATION



Source: Five Year Plan for Jobs, Services and Infrastructure 2017-2021 (Initial Investment Report), State Government of Victoria (2017).

FIGURE 3: INNER SOUTH EAST METRO REGION CONTEXT MAP



Source: *Plan Melbourne* - State Government of Victoria (2017)

2. GEOGRAPHIES AND CATEGORIES

A range of reporting geographies are used to help understand how the Inner South East Metro Region functions.

Urban areas contain a mix of residential, economic, industrial, recreation, education, health and other spaces. The distribution of activity within these spaces, and the way people move within and between them, contributes to the demand for various types of infrastructure.

While standard local government and ABS defined areas are useful, consideration of different types of areas and the activities they accommodate can provide a more nuanced understanding of an area.

2.1 Key reporting geographies

Analysis against a range of geographies, as presented in Table 1, use definitions based on SGS's knowledge of urban development patterns.

The analysis has primarily been based around LGAs (due to data limitations) and location typologies.

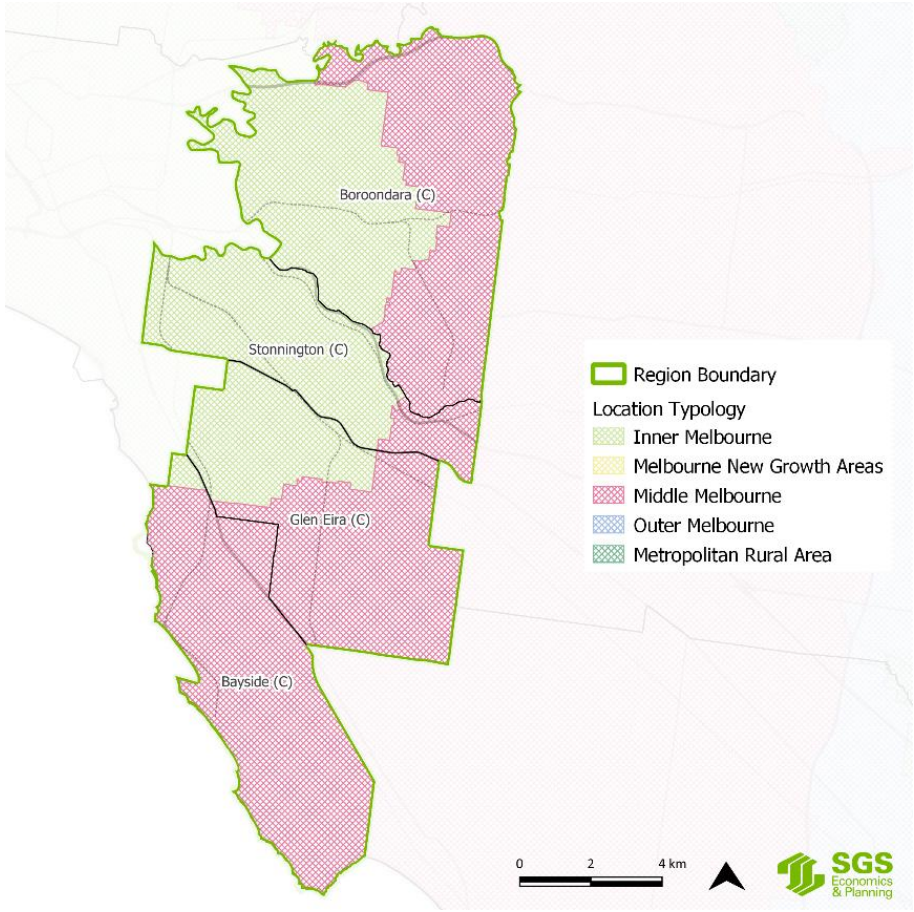
Different economic regions are used in the FER report.

TABLE 1: SUMMARY OF REPORTING GEOGRAPHIES

Region	Approach to defining
Planning subregions	*Plan Melbourne* regions: groups of LGAs
Location typology Figure 4	▪ Inner: combination of tram network coverage, and 8km from CBD (e.g. does not include full extent of 86 tram to Bundoora, and extends further in to west where there is limited tram network) ▪ Middle: areas within the Western Ring Road, and other areas between Outer and Inner ▪ Outer: established outer suburbs within the Urban Growth Boundary ▪ Melbourne New Growth Areas: areas covered by Precinct Structure Plans (PSPs) ▪ Metropolitan Rural Areas: non-PSP areas within metropolitan Melbourne
Current planning areas	The current defined planning and other geographies, including activity centres, national employment and innovation cluster (NEIC) boundaries and State significant industrial precincts as per *Plan Melbourne*
Economic locations	Based on current planning areas plus cluster analysis, includes economic nodes not yet designated (e.g. Moorabbin, Bayswater) and areas already designated, with limited employment (i.e. future planned centres). Draws on: ▪ existing employment land- based on ABS Mesh Block Land Use Categories: Commercial, Hospital/Medical, Industrial ▪ job density for 2016 by four broad industries categories ▪ clustering analysis based on DBSCAN algorithm
Standard ABS geographies	▪ LGAs: local government areas ▪ SA2: areas that represent a community that interacts socially and economically (generally 3,000-25,000 people) ▪ SA3: areas with similar regional characteristics, administrative boundaries or labour markets (generally 30,000-130,000 people) ▪ SA4: Used for output of labour force survey data, reflect labour markets within each State/Territory (generally 100,000+ people, sometimes 300,000-500,000 people in metropolitan areas)
SGS HEX Grid	▪ 30ha grid

Source: SGS Economics and Planning, 2018

FIGURE 4: INNER SOUTH EAST METRO REGION: LGAS AND LOCATION TYPOLOGIES



Source: SGS Economics and Planning, 2018.

2.2 Economic classifications

The 19 ANZSIC (1 digit) industry classifications have been aggregated into four broad industry classifications in this report. Creative industries are classified as knowledge-intensive. The tourism industry straddles a number of standard industry classifications. The contribution of tourism is often indirect, generating output and creating jobs in sectors such as retail trade, arts and recreation services, accommodation and food services in particular.

TABLE 2: BROAD INDUSTRY CLASSIFICATIONS

Classifications	ANZSIC 2006 1 digit industry
Knowledge-intensive	▪ Information media and telecommunications ▪ Financial and insurance services ▪ Rental, hiring and real estate services ▪ Professional, scientific and technical services ▪ Administrative and support services ▪ Public administration and safety
Health and education	▪ Education ▪ Health care and social assistance
Population-serving	▪ Retail trade ▪ Accommodation and food services ▪ Arts and recreation services ▪ Construction ▪ Other services
Industrial	▪ Agriculture, forestry and fishing ▪ Mining ▪ Manufacturing ▪ Electricity, gas, water and waste services ▪ Wholesale trade ▪ Transport postal and warehousing

3. DRIVERS OF CHANGE

3.1 Overview

A series of global megatrends is shifting the way people live and work, with implications for business and life in metropolitan Melbourne and in the Inner South East Metro Region.

Three key drivers of change have been identified:

- **Economic structural** change: The Inner South East Metro Region has an even distribution of employment density, with the densest cluster around the western parts of the City of Stonnington, closer to the CBD. The economy is continuing to strengthen around health and education, and population-serving industries. Significantly fewer people live and work in the region than in other parts of metropolitan Melbourne (around 30 per cent versus 50 per cent). The region benefits from its proximity to the employment opportunities of the CBD. While it is small, it is one of most productive regions in Melbourne; this provides a major opportunity for the Inner South East Metro Region. It also presents a real challenge for more traditional industry areas dispersed across the region. Traditional industries are typically those that are described as being low-tech, less-research intensive, and are generally low skill.
- **Rapid urbanisation**: Australian population growth continues to be concentrated in existing major urban centres, particularly in Melbourne and Sydney. Despite this, population growth in the Inner South East Metro Region is forecast to be generally lower than the metropolitan Melbourne average. While some infill development has occurred in recent years, the sustained level of high population growth seen elsewhere has not occurred in the region.
- **Impacts of climate changes**: The impacts of climate change are being felt across the city in a range of ways. As rapid urbanisation continues, the effects of urban heat islands, decreasing tree canopy cover and scarce water resources will be felt by many residents. Access to resources such as water, land and energy will affect how and where businesses and people locate and operate.

3.2 Structural economic changes

Growth in new jobs

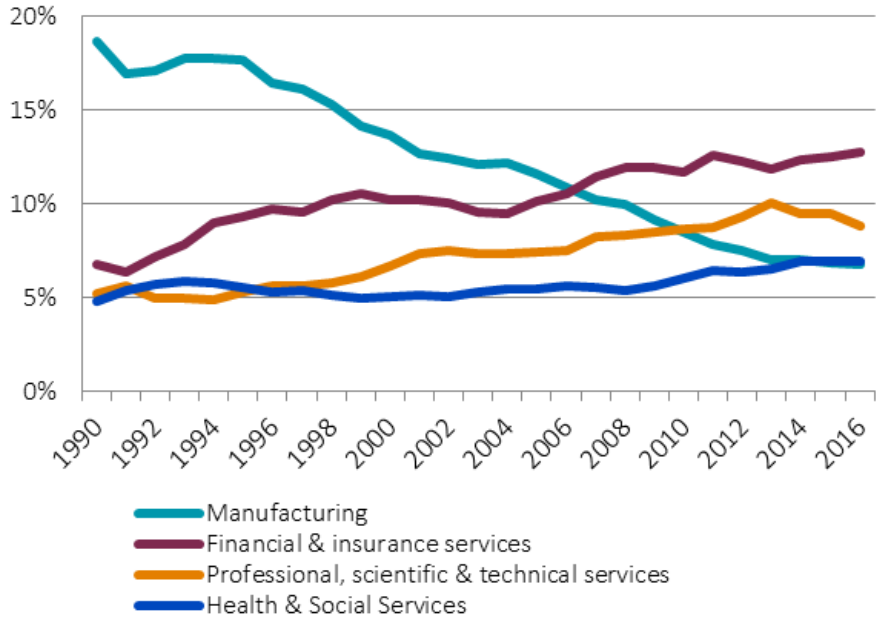
Melbourne's economy, like that of many other cities, has changed. Previously dominated by manufacturing and industrial activities, it has been transformed into one more reliant on knowledge-intensive activities and services (See Figure 5). These professional services include a range of business functions involving finance, design, engineering, architecture, IT, marketing, law, accounting, universities and research and development institutions.

Despite this, manufacturing and other primary industries will remain and must be highly innovative to prosper. This will demand, directly or indirectly, heavy involvement by professional services. Likewise, population-serving sectors like retail, health and hospitality will require access to analytical and creative services if they are to boost productivity and continue to innovate.

Knowledge-intensive activities require access to diverse skills and client bases to specialise and build resilience. They also need to attract and retain highly skilled/specialised labour. For these reasons they typically locate (or agglomerate) in highly accessible, high amenity and diverse environments.

The massing and clustering of professional services improves businesses' ability to innovate, boosting their productivity and, in turn, that of their customers. Agglomeration benefits are one of the main attractions for the growing professional services industries to locate in central city areas and near major institutional and economic nodes.

FIGURE 5: SHARE OF MELBOURNE'S GDP, SELECTED INDUSTRIES



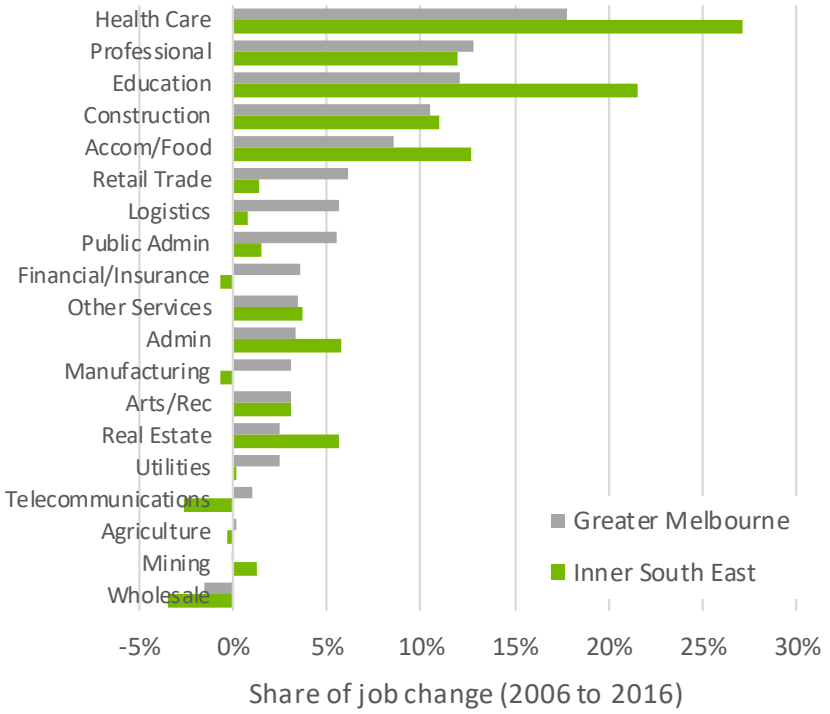
Source: SGS Economics and Planning

The Inner South East Metro Region contained 213,000 jobs in 2016 and contributed over 10 per cent of metropolitan Melbourne's GRP. It also represents 10 per cent of Melbourne's jobs.

Figure 6 presents the share of jobs growth over the last decade by industry for the Inner South East Metro Region and metropolitan Melbourne. This illustrates the structural change in the economy where many of the top industries are services based – health care, professional, education, retail, accommodation and food, public administration.

The industry profile of the Inner South East Metro Region is broadly consistent with this overarching trend. It has seen higher growth in education and health and knowledge-intensive jobs (albeit starting from a lower base), linked to its population growth and highly skilled workforce. Industrial activities are notably lower than the metropolitan average, highlighting the degree to which the region is established and urbanised. Some growth in the knowledge-intensive economy has occurred and may continue (see Figure 6).

FIGURE 6: SHARE OF EMPLOYMENT GROWTH (2006 TO 2016)

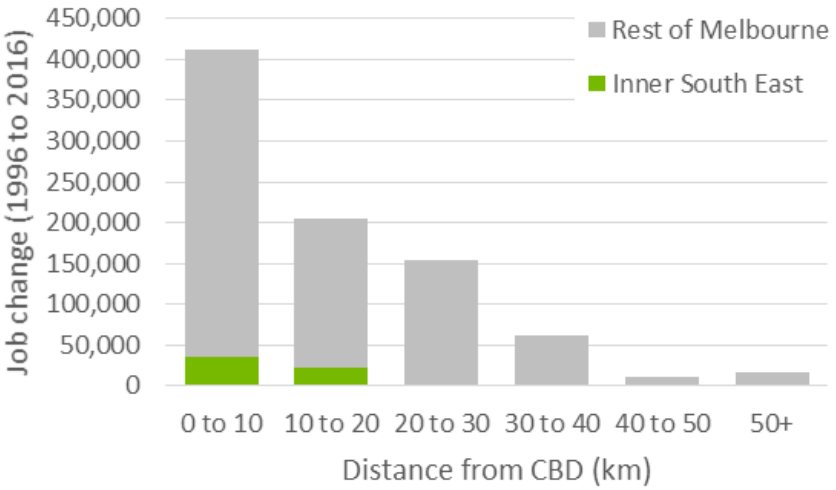


Source: SGS Economics and Planning, derived from NIEIR (2018)

The changing industry structure may have less of a direct spatial implication for the Inner South East Metro Region than other parts of Melbourne. Figure 7 provides a high-level overview, presenting the change in jobs (1996 to 2016) by distance to the CBD. Employment location is investigated in Section 4.

Figure 7 illustrates that employment growth in the Inner South East Metro Region has been geographically clustered closer to the Central City, reflecting the locations of activity centres and the smaller scale of the region itself. The region has not captured a substantial share of the significant inner-city jobs growth, which is largely linked to knowledge services, as reflected in the lower rate of people living and working in this region. The region's residents can access these inner city jobs and provide the workforce for jobs in Melbourne's CBD.

FIGURE 7: EMPLOYMENT GROWTH BY DISTANCE TO CBD



Source: SGS Economics and Planning, derived from NIEIR (2018)

Automation and the changing nature of work

Technology is changing all types of jobs and how people work. Automation is an ongoing process with continual technological development that will impact all sectors of the economy.

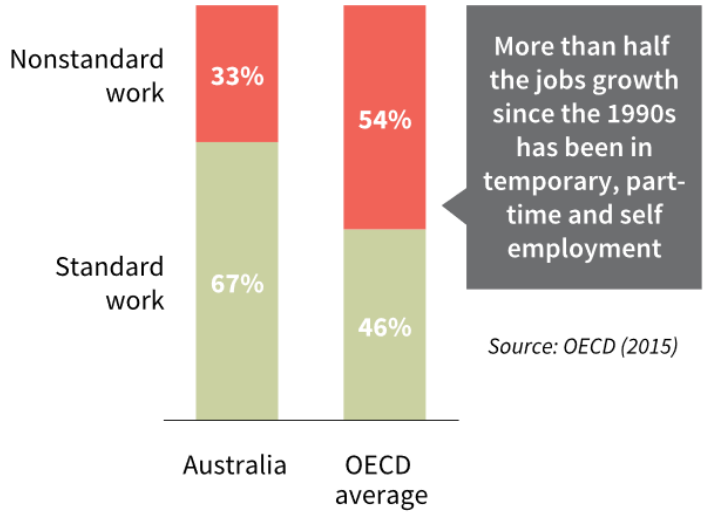
Jobs that will be difficult to automate include those that require human thinking, creativity and problem solving and high levels of skills training, as well as those that require human touch and highly developed vocational skills. The next wave of jobs likely to be automated are not necessarily lower-skilled manufacturing, but routine white-collar jobs such as call centre workers, legal clerks, accountants and retail workers.

'Task-biased technical change' is the leading framework for analysing the impact of technology on work.[1] It is used to measure the intensity of *abstract*, *routine* and *manual* tasks across different occupations.

While abstract and manual tasks are hard to automate, routine tasks can be easily broken down and codified into a computer program because they follow precise, well-understood procedures. These trends cannot be neatly aligned to the structural shifts in the industry composition of metropolitan Melbourne's economy. These issues are further investigated in the FER profile.

There has been a gradual increase in non-standard or alternative working arrangements (see Figure 8) such as self-employment, temporary agency work, seasonal work, independent contracting, fixed term contracts and on call work *(Independent Inquiry into Insecure Work*, 2012). Increasingly people are also piecing their incomes together from a portfolio of activities, including platforms like Air Tasker, Freelancer, Uber, WeWork, Deliveroo and Airbnb[2].

FIGURE 8: PERCENTAGE OF JOBS GROWTH IN NON-STANDARD AND STANDARD WORK (1990-2015)



Source: FYA, 2015.

For the Inner South East Metro Region, the already highly skilled workers are likely to be resilient to automation, with higher education rates and socio-economic prosperity making the region's population, in general, able to acquire new skills to participate in this rapidly changing and innovative new economy. There will continue to be opportunities for hands-on sectors including construction trades, health care services and education.

[1] TBTC first proposed by Autor, et al. (2003) and further by Goos and Manning (2007), Autor, Katz and Kearney (2006, 2008), and Acemoglu and Autor (2011).

[2] McKinsey and Company (2016), Independent Work: Choice, necessity, and the gig economy. Accessed 23 October from: https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Employment%20and%20Growth/Independent%20work%20Choice%20necessity%20and%20the%20gig%20economy/Independent-Work-Choice-necessity-and-the-gig-economy-Executive-Summary.ashx

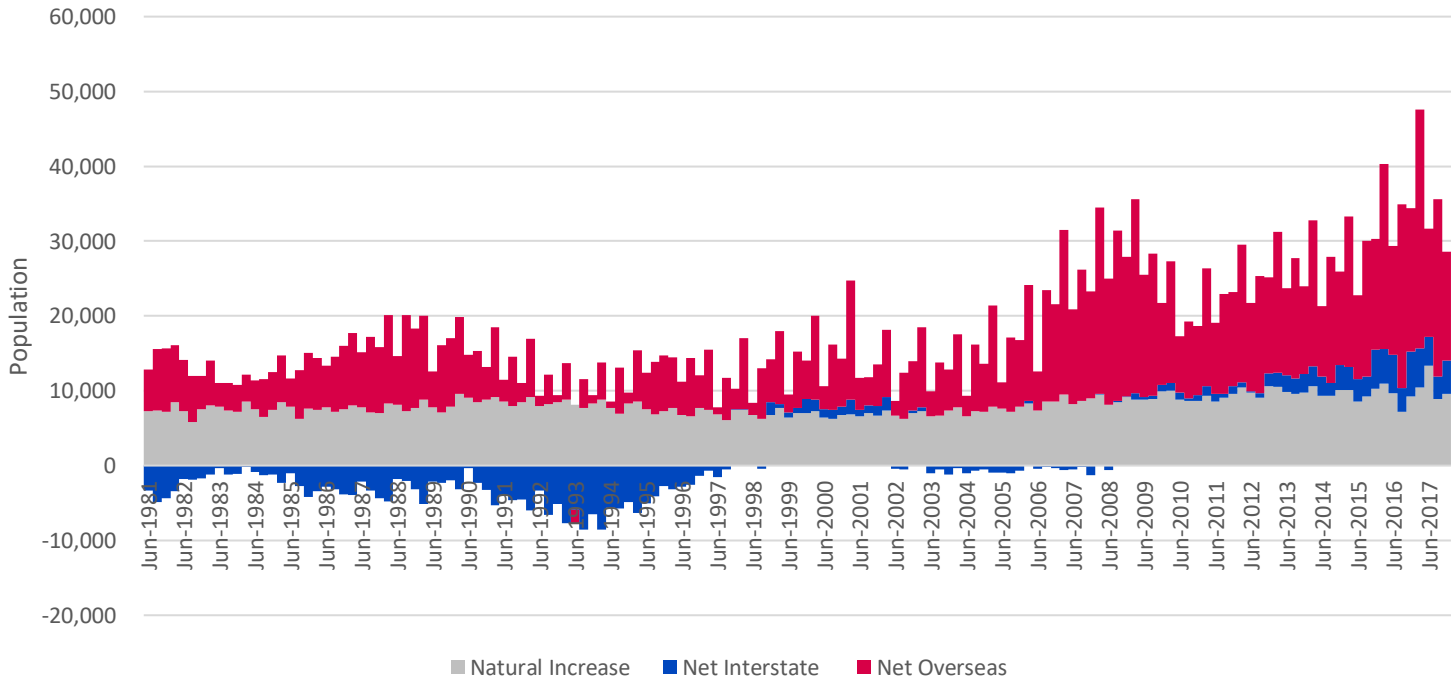
3.3 Rapid urbanisation and demographic shifts

People are choosing to live in urban environments to access jobs and a higher standard of living. Australia is one of the most urbanised countries in the world and population growth is expected to continue in the capital cities (PWC, 2015).

In terms of population growth, metropolitan Melbourne has been the fastest growing capital city in Australia since 2012. Factors driving the population boom include strong economic growth, a high standard of living, high amenity lifestyle and good infrastructure.

Figure 9 presents the components of population growth for Victoria over the last three decades. While natural increases in population have remained stable, both net overseas and net interstate migration have increased. In the 1980s and 90s, Victoria experienced a net outflow of interstate migrants, largely to Queensland and Western Australia. This trend has since reversed largely driven by strong economic opportunities available in Melbourne and Sydney. Over this period, there has also been a rise in overseas migration driven by the above factors and increases in national intake level.

FIGURE 9 COMPONENTS OF POPULATION GROWTH, VICTORIA



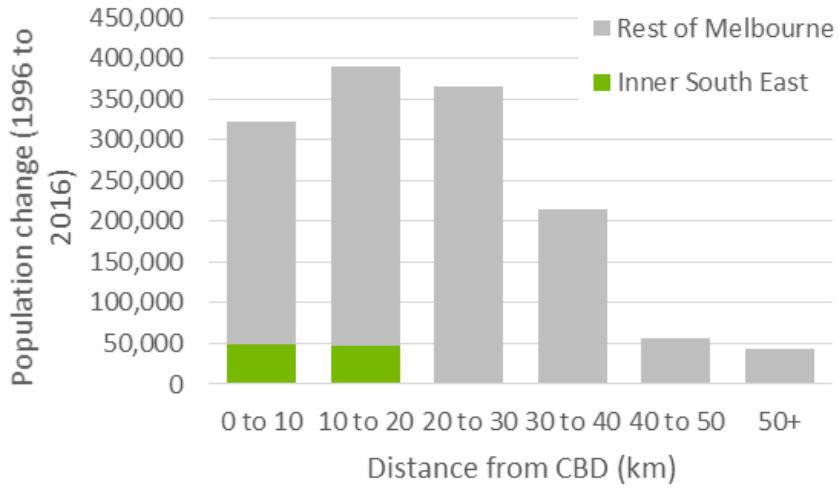
Source: ABS Regional Population Growth (Cat. 3218.0)

Population growth has been accommodated in urban growth areas around the fringe of metropolitan Melbourne, as well as the renewal of established parts of the city. Figure 10 shows a more dispersed pattern of residential settlement than in the case of employment growth (seen in Figure 7 earlier).

The Inner South East Metro Region was home to 540,770 people in 2016 and has added 104,655 people over the last two decades. This represents eight per cent of Melbourne's population growth over that period.

The region has experienced low growth rates relative to the rest of metropolitan Melbourne. With no greenfield development sites, population growth has been accommodated in the established urban area. In recent years infill development is concentrated along the east-west railway lines that run through the region.

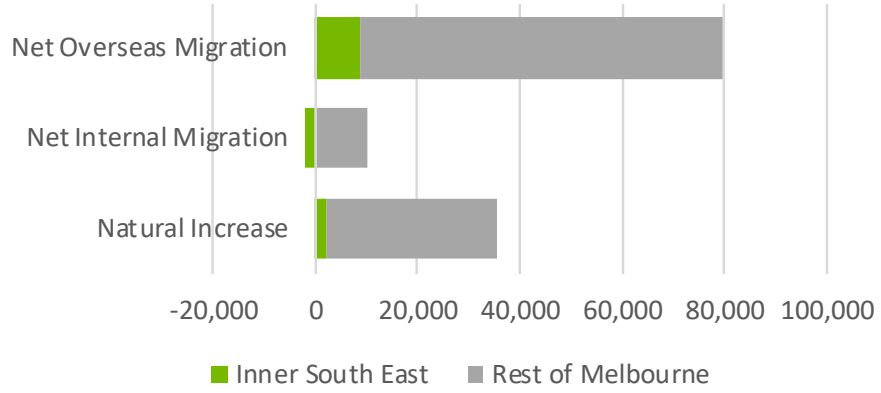
FIGURE 10 POPULATION GROWTH BY DISTANCE TO CBD



Source: SGS based on ABS Census, 2016.

Population growth has implications for the demographic profile of a region. Figure 11 presents the components of population growth for Melbourne and the Inner South East Metro Region in 2017. Most population growth in the region can be attributed to net overseas migration, with negative net internal migration and only a slight contribution from natural increase.

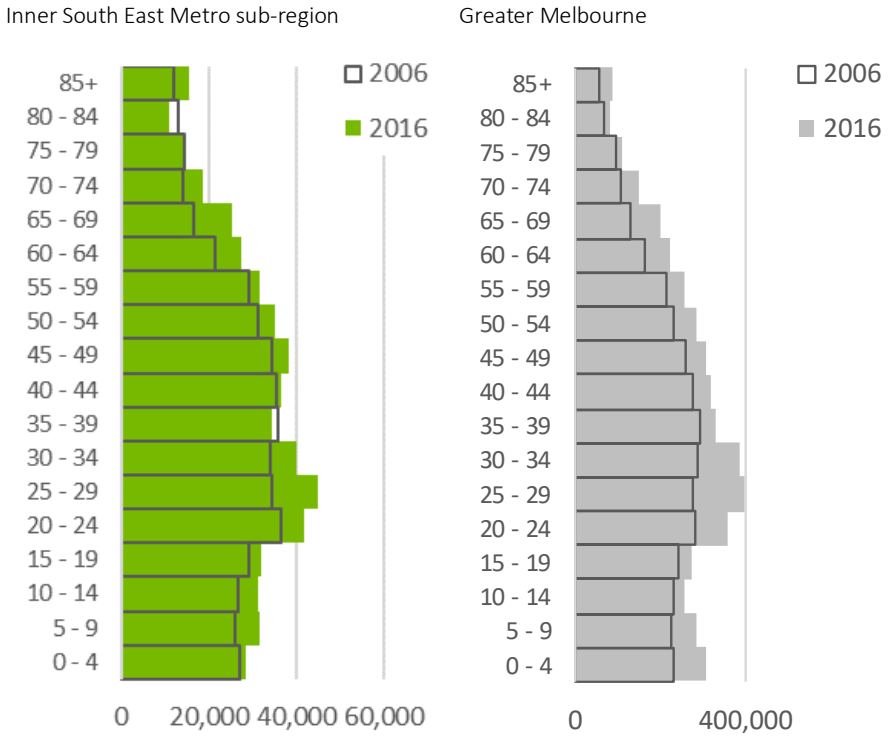
FIGURE 11 COMPONENTS OF POPULATION GROWTH (2017)



Source: ABS Regional Population Growth (Cat. 3218.0)

Figure 12 presents a population pyramid for the Inner South East Metro Region and metropolitan Melbourne between 2006 and 2016. It shows the largest increase in population for people in the 20s and early 30s, and then again relatively large increases in the 60+ age categories.

FIGURE 12 POPULATION AGE STRUCTURE (2006 AND 2016)



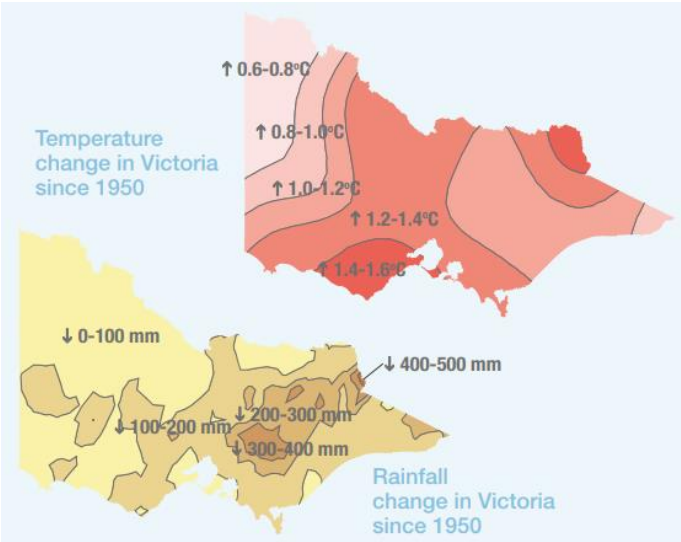
Source: ABS Census 2016

3.4 Climate change

Climate change has resulted from decades of unsustainable human activity. Its effects are largely attributed to emissions from the use of non-renewable energy sources. As most people now live in urban centres, cities and urban activities are the greatest contributors to climate change.

Consequently, global climates are becoming increasingly volatile and extreme, and the impacts of climate change are felt in all areas. Climate change in Australia manifests as temperature rises, and increased incidences and intensity of extreme weather events. In other instances, it manifests as higher incidences of nuisance flooding, or unpredictable bushfire behaviour. For Victoria this includes heatwaves, fires, droughts, storms and floods. Historical temperature and rainfall changes, as illustrated in Figure 13, show the influence of climate change in Victoria.

FIGURE 13: TEMPERATURE AND RAINFALL CHANGE (1950-2015)



Source: Climate Ready Victoria 2015

This has consequences for the natural environment, including a decrease in species diversity and abundance, vegetation structure and genetic loss. Climate change also has implications on the safety and livelihoods of communities. This includes risks for infrastructure as well as primary production, tourism, health and the community (Climate Ready Victoria, 2015).

Key risks to infrastructure from climate change include increasing sea levels, fire weather, flooding, hot days, heat waves and storm surges. These damage infrastructure, increase maintenance costs and disrupt services (Climate Ready Victoria 2015).

Extreme temperatures increase the likelihood of damage or loss of energy infrastructure which could limit supply of energy, or further exacerbate capacity issues during peak times. Heatwaves may also degrade structures, buckle train tracks or cause overheating at water purification plants.

Droughts may result in faster degradation of bridges, roads and tunnels from changing groundwater levels, shifting foundations of buildings or cracking of underground pipes. Increasing water insecurity may have implications for the integrity of ecological systems and biodiversity, economic production and consumption, and the health and wellbeing of communities.

Infrastructure near the coast may be impacted by sea level rises and coastal erosion, causing corrosion of pipes through salt water intrusion, roads to be washed away, ports flooded and degraded, flooding of exchange stations, sub stations, manholes and underground pits (Commissioner of Environmental Sustainability Victoria, 2013).

For the Inner South East Metro Region, this will mean:

- increased risks due to extreme heat, particularly areas with sparser vegetation such as the City of Glen Eira
- risks to vulnerable population, particularly in areas with limited vegetation and relief from heat.

4. ECONOMIC

ECONOMIC INDICATORS

The Infrastructure Victoria economic indicators that underpin this section are:

- Employment location
- Economic location
- GRP
- GVA by industry
- Exports
- Business formation
- Effective job density
- Capital investment
- Labour productivity
- Participation rate
- Unemployment
- Change in working age population
- Household income
- Public transport
- Travel origins and destinations
- Freight and road networks
- Freight and business trips
- Households with vehicles
- Access to internet
- Skill levels
- Employment concentration of industries
- Location quotient

REGIONAL OVERVIEW

The Inner South East Metro Region's economic profile is characterised by:

- small commercial centres dispersed between established residential suburbs
- population-serving, health and education, and knowledge-intensive industries, with concentrations in key economic locations
- absence of industrial activity.

ECONOMIC STRENGTHS

- Excellent access to employment with high effective job density across the region.
- Highly skilled workforce above the Victorian and metropolitan Melbourne averages.
- 19 major activity centres.
- Strong road and public transport links.

ECONOMIC CHALLENGES

- High costs of housing and less diversity in resident workforce.
- High land value and housing affordability impacting small business growth.

4.1 Overview and key economic features

FIGURE 14: KEY ECONOMIC FEATURES

Source: SGS Economics and Planning, 2018

While it is Melbourne's second smallest region by area, the Inner South East Metro Region is also one of the most prosperous. In 2016 the region generated approximately 10 per cent of the total GRP of metropolitan Melbourne. The region is home to Swinburne University and Monash University (Caulfield). It has a strong employment base in population-serving and knowledge-intensive industries.

The major road links in the region include the Nepean Highway, Monash Freeway, Eastern Freeway and Princes Highway. These all provide radial connections out from the CBD.

The rail network in Inner South East Metro Region includes:

- Metro passenger services to Sandringham and Alamein and sections of the Frankston, Ringwood corridor and Pakenham/Cranbourne corridor
- regional passenger services to Gippsland via the Pakenham/Cranbourne corridor.

The region contains 19 major activity centres, made up of significant retail precincts and concentrations of private, government and community sector jobs and services.

4.2 Economic performance

Table 3, Figure 15 and Figure 16 show current employment and employment growth in the Inner South East Region.

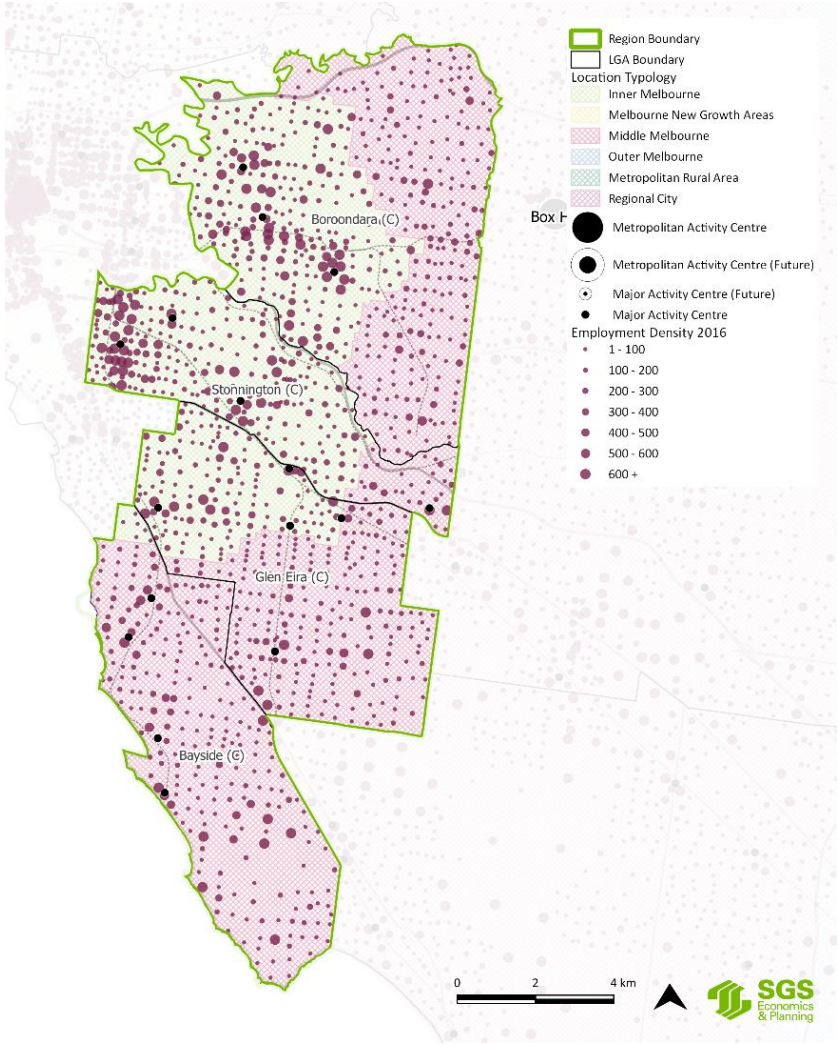
- The Inner South East Metro Region experienced five per cent average annual growth in employment between 1996 and 2016, more than double the rate for the State average.
- During this period, the inner areas of the region, including South Yarra, Malvern/Armadale, Hawthorn-Glenferrie Road and Camberwell, absorbed 61 per cent of total regional growth in employment.
- At LGA level, City of Stonnington absorbed the greatest amount of jobs (35 per cent) followed by City of Boroondara (26 per cent) and City of Glen Eira (25 per cent). City of Bayside had the lowest change in growth (14 per cent) between 1996 and 2016.
- The inner area accommodated the most significant proportion and actual number of additional regional jobs and the largest concentration of jobs in 2016.
- Employment is decentralised and spread across the entire Inner South East Metro Region.
- There are clusters of higher density in the inner parts of Stonnington, Glen Eira and Boroondara LGAs, with additional areas of higher density dotted across all LGAs.
- All LGAs experienced employment growth.
- The greatest change in employment growth was concentrated in the City of Glen Eira around Bentleigh and the inner areas of the City of Stonnington.

TABLE 3: EMPLOYMENT BY LGA AND LOCATION TYPOLOGY (1996-2016)

	1996	2016	1996-16		
			Change	% region	AAGR
					LGA
Bayside	26,140	34,019	7,880	13.8%	0.7%
Boroondara	67,605	82,491	14,887	26.1%	1.3%
Glen Eira	28,958	43,037	14,079	24.7%	1.2%
Stonnington	42,662	62,752	20,089	35.3%	1.8%
Inner South East Metro Region	**165,365**	**222,299**	**56,934**	**100.0%**	**5.0%**
					Location Typology
Inner Melbourne	100,867	135,320	34,453	60.5%	3.0%
Middle Melbourne	64,496	86,978	22,482	39.5%	2.0%
Inner South East Metro Region	**165,363**	**222,298**	**56,935**	**100.0%**	**5.0%**
Victoria	**2,045,773**	**3,032,148**	**986,375**	**-**	**2.0%**

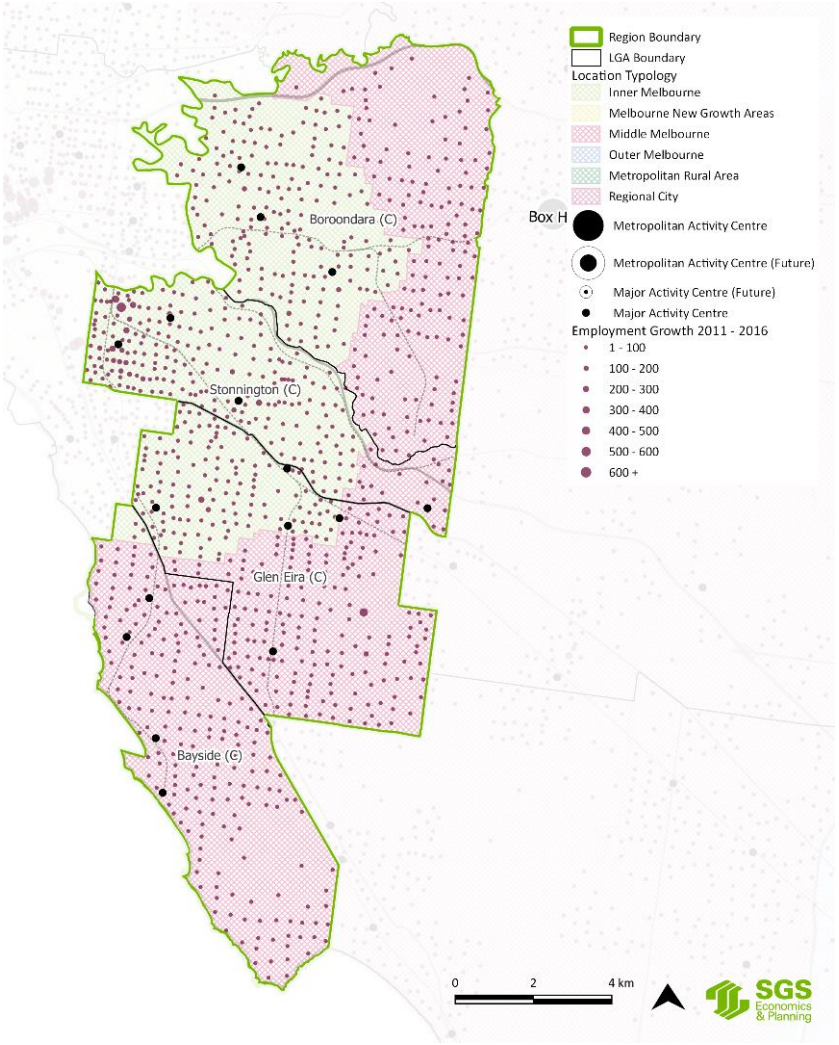
Source: SGS Economics and Planning, 2018

FIGURE 15: EMPLOYMENT DENSITY BY LGA (2016)



Source: SGS Economics and Planning, 2018

FIGURE 16: EMPLOYMENT GROWTH (2011 - 2016)



Source: SGS Economics and Planning, 2018

Figure 17 shows employment by four broad industry classifications. The entire Inner South East Metro Region is well served with employment opportunities.

- Population-serving industries are densely distributed across the entire Inner South East Metro Region, with greatest concentrations in inner Melbourne.
- Health and education industries are the second most densely distributed and spread across all LGAs in the region.
- Knowledge-intensive industries are found across the region but most concentrated in the inner areas of the City of Stonnington and the City of Boroondara.
- There are some concentrations of industrial employment in the inner areas of the City of Stonnington and City of Boroondara, with pockets in the City of Glen Eira and outer areas of the City of Bayside.

FIGURE 17: EMPLOYMENT BY INDUSTRY CLASSIFICATION (2016)

Source: SGS Economics and Planning, 2018

Economic locations

Economic locations are areas with a dense cluster of economic and employment activity. These clusters have unique economic profiles, which reflect the attributes and endowments of their catchment area workforces and historic legacy, and different levels of development maturity. The locations capture many places of State significance identified in *Plan Melbourne*. While they do overlap with the *Plan Melbourne* locations, the boundaries are not identical. They also capture clusters that are not in *Plan Melbourne*.

Economic locations are employment clusters with a minimum of 5,000 jobs within a one-kilometre radius. See Table 1 for further information.

The economic locations driving production and employment in the Inner South East Metro Region are shown in Table 4 lists the number of jobs and industry breakdowns for each economic location.

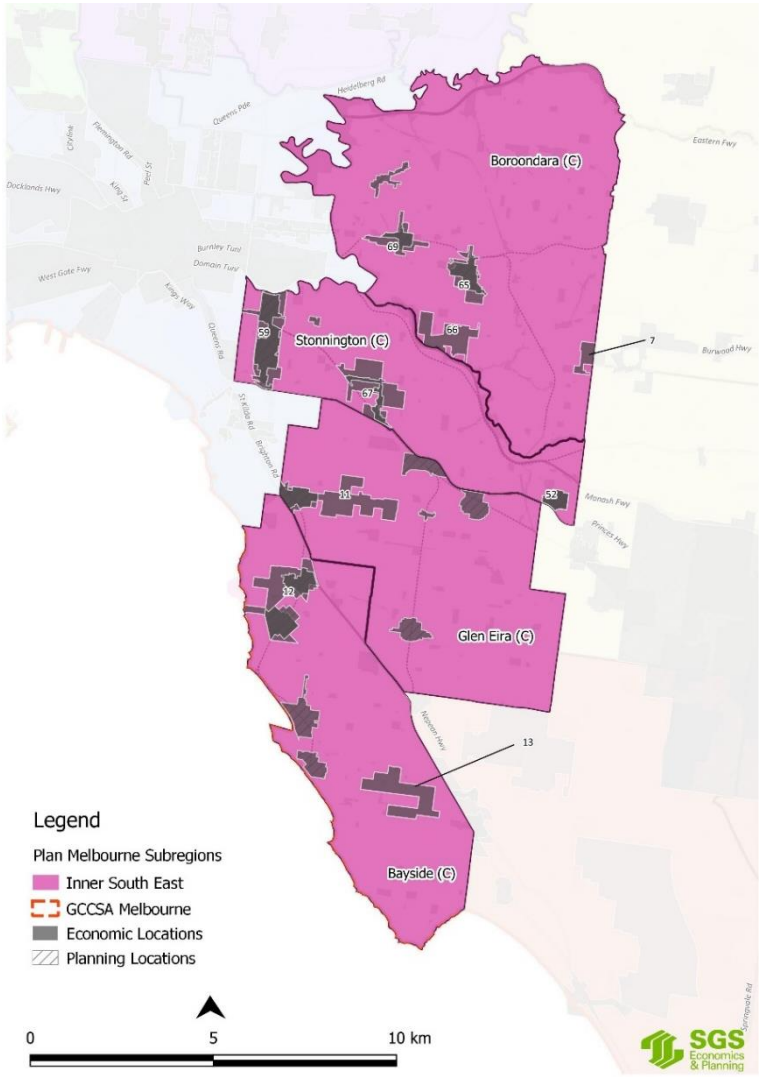
Prahran/South Yarra (cluster ID 59) is the largest economic location in the region with 17,691 jobs, 42 per cent of which are population-serving and 41 per cent knowledge-serving.

Camberwell Junction (cluster ID 65), Hawthorn-Glenferrie Road (cluster ID 69) and Malvern/Armadale (cluster ID 67) each had around 9,000 jobs. Camberwell Junction had 44 per cent of jobs in knowledge serving while Malvern/Armadale and Hawthorn-Glenferrie Road had higher proportions of jobs in health and education.

Figure 18 shows where economic locations overlap with *Plan Melbourne* locations. Glen Iris (cluster ID 66), Burwood (cluster ID 7) and Cheltenham-Southland (cluster ID 13) are the only economic locations that are not identified in *Plan Melbourne*.

The remaining economic locations in the Inner South East Metro Region are also identified as major activity centres in *Plan Melbourne*. Several of these are not economic clusters: Caulfield, Carnagie and Bentleigh in the City of Glen Eira, Kew Junction in the City of Boroondara and Hampton and Sandringham in the City of Bayside.

FIGURE 18: ECONOMIC LOCATIONS



Source: SGS Economics and Planning, 2018

TABLE 4: ECONOMIC LOCATIONS BY INDUSTRY (2016)

Clusterid	Economic locations	LGA	Knowledge Intensive	Industrial	Population Serving	Health & Education	Total jobs
7	Burwood	Boroondara	18%	15%	23%	45%	382
11	Elsternwick	Glen Eira	26%	7%	26%	40%	7,358
12	Brighton-Bay Street	Bayside	23%	5%	38%	34%	6,199
13	Cheltenham-Southland	Bayside	19%	35%	38%	9%	7,663
52	Chadstone	Stonnington	13%	6%	79%	2%	4,858
59	Prahran/South Yarra	Stonnington	41%	5%	42%	12%	17,691
65	Camberwell Junction	Boroondara	44%	12%	28%	16%	9,464
66	Glen Iris	Boroondara	30%	9%	50%	11%	7,599
67	Malvern/Armadale	Stonnington	20%	5%	28%	46%	9,608
69	Hawthorn-Glenferrie Road	Boroondara	28%	8%	26%	38%	9,298

Source: SGS Economics and Planning, 2018

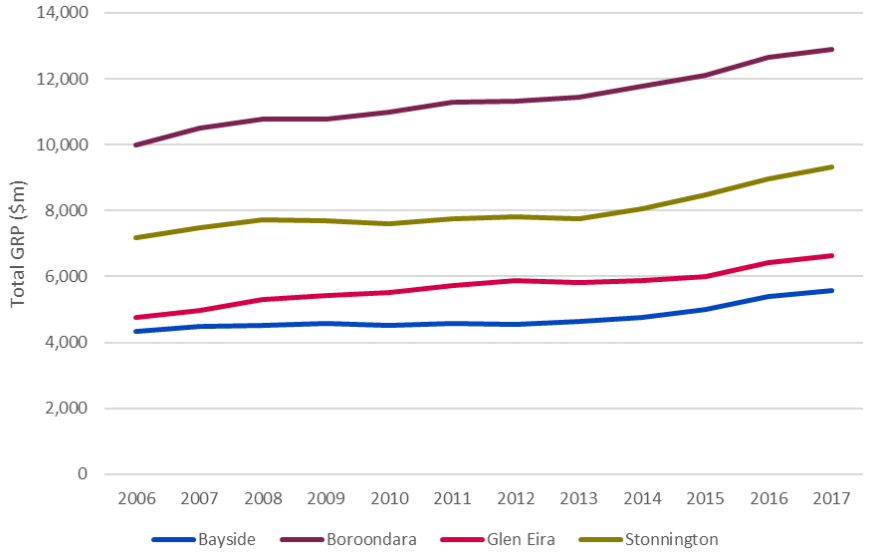
Gross regional product GRP

Gross regional product (GRP) measures the total quantity of economic production (goods and services in dollar terms) within a region. The GRP of a metropolitan area is a good measure of the size of its economic output, but not necessarily its value added or productivity (gross value added (GVA) and labour productivity are discussed separately). This section discusses GRP measured at place of work by LGA.

Figure 19 shows the total GRP LGA.

- The Inner South East Metro Region grew total GRP between 2006 and 2016 with all LGAs showing similar trends.
- The City of Boroondara reported the highest GRP for the region between 2006 and in 2016. Its economy is supported by employment clusters in Hawthorn around Swinburne University.
- The City of Bayside reported the lowest GRP due to the high proportion of residential zones and fewer commercial activities.
- The City of Stonnington experienced steady growth between 2013 and 2017. In addition to a strong retail sector and education institutions, the inner areas of the City of Stonnington are attractive location for younger workers and knowledge-intensive industries.

FIGURE 19: TOTAL GRP (2006 - 2016)



Source: NIEIR 2018

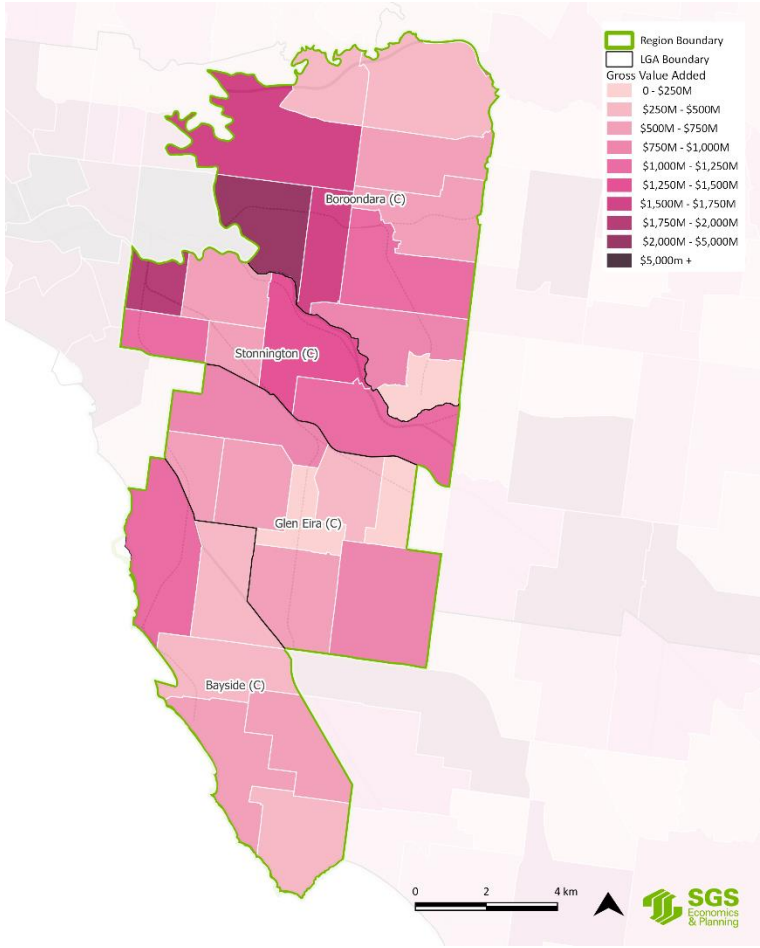
Gross value added (GVA) by industry

Gross value added (GVA) represents the total value added for all goods and services produced within a region. The difference between GRP and GVA is similar to the difference between the sales revenue and profits of a single firm. For example, a region may have a high level of output (i.e. GRP) but low value added (i.e GVA), meaning that a large quantity of resources was used in the production process.

Figure 20 illustrates the total GVA across the Inner South East Metro Region.

- With industries dispersed across the majority of the Inner South East Metro Region most areas contribute to the productivity of the region.
- High levels of GRP are clustered around inner areas of Stonnington and Boroondara LGAs.
- The cluster in Boroondara and Stonnington LGAs extending from the Monash Freeway corridor experiences higher GRP.
- The distribution of total GVA reflects the employment and economic locations in the region shown in Figure 15 to Figure 18.

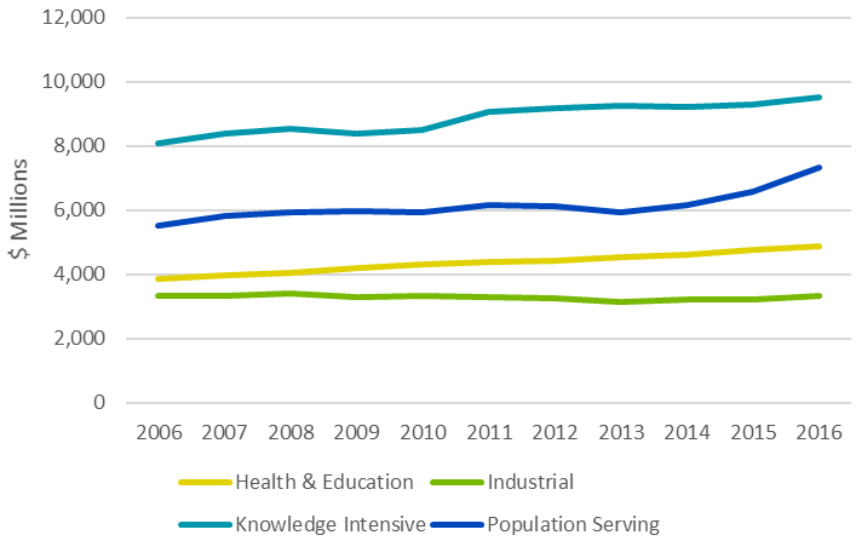
FIGURE 20: TOTAL GVA (2016)



Source: SGS Economics and Planning, derived from various ABS datasets

Figure 21 shows the historic GVA across four industry classification in the Inner South East Metro Region. Knowledge-intensive industries had the highest GVA from 2006 to 2016, followed by population-serving industries. While health and education increased between 2006 and 2016 it had a lower GVA. Industrial sector GVA was steady over this period but only accounts for a small share of the region's GVA.

FIGURE 21: GVA BREAKDOWN BY INDUSTRY CLASSIFICATION (2006-2016)



Source: NIEIR 2018

Exports

Exports are goods transferred between countries and are essential to a country's economy. High international exports contribute to the growth of a region and help boost employment.

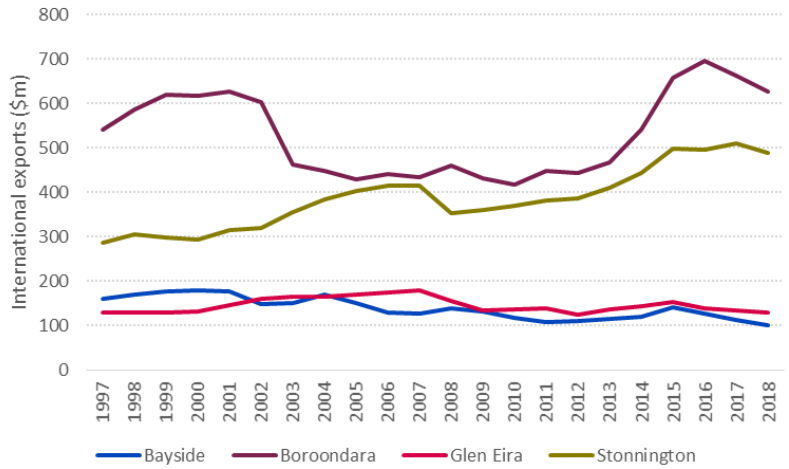
Figure 22 shows international exports for each of the Inner South East Metro Region LGAs.

- The City of Boroondara's annual income from international exports were the highest in the Inner South East Metro Region from 1997 to 2018 despite fluctuations.
- The City of Stonnington experienced overall growth in income from international exports over the same period.
- Boroondara and Stonnington LGAs saw a reduced income from international exports since 2016 and 2017 respectively.
- The City of Glen Eira and the City of Bayside have lower income from international exports, well below $200m in annual income and generally decreasing, suggesting this is not a large component of local activities.

Figure 23 shows a breakdown of international exports by industry for the region:

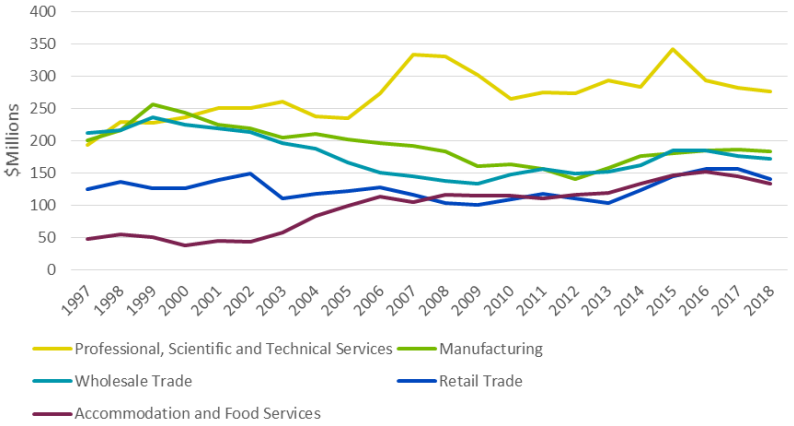
- Professional, scientific and technical services were the highest exports by dollar value.
- Manufacturing and wholesale trade decreased from 1987 to 2018.
- Retail trade export remained relatively steady over this period while accommodation and food services increased.

FIGURE 22: INTERNATIONAL EXPORTS BY LGA (1997-2018)



Source: NIEIR 2018

FIGURE 23: TOP 5 INTERNATIONAL EXPORTS BY INDUSTRY (1997-2018)



Source: NIEIR 2018

Business formation

Business formation is the registration and de-registration of businesses by different industries. To measure the growth of business in the Inner South East Metro Region, the four industry classifications are used (Table 5 and Table 6).

- The highest growth is seen in health and education sector in every LGA in the Inner South East Metro Region, in response to increased demand for these services by the growing population. Education income from international students may also influence the sector's growth.
- Business formation in the knowledge-intensive sector also grew. In part this represents a shift from an industrial-based economy to a knowledge-based economy, particularly in the south east of the region in the City of Bayside and the City of Stonnington. At the same time the growth in knowledge-intensive industries represents an increased concentration of the sector within the region.
- Population-serving industries are an important sector in the region with all LGAs experiencing some growth, highest in the City of Boroondara at 18 per cent.
- Industrial sector businesses are moving out of the Inner South East Metro Region and concentrating in key economic locations in Melbourne's the south east and north.

TABLE 5: BUSINESS FORMATION (GROWTH RATE) BY INDUSTRY (2009-2017)

LGA	Health and Education	Industrial	Knowledge Intensive	Population Serving
Bayside	25.4%	-15.5%	17.3%	10.3%
Boroondara	28.8%	-3.2%	19.8%	18.2%
Glen Eira	28.8%	-6.0%	18.2%	11.6%
Stonnington	31.5%	-8.4%	16.5%	12.0%
Victoria	42.2%	1.2%	24.3%	15.2%

Source: ABS Counts of Australian Businesses, including Entries and Exits 2009 and 2017

TABLE 6: BUSINESS FORMATION (COUNT) BY INDUSTRY (2009-2017)

LGA	Health & Education	Industrial	Knowledge Intensive	Population Serving
2009				
Bayside	952	1,514	6,184	3,020
Boroondara	2,458	2,635	11,706	4,598
Glen Eira	1,173	1,934	6,719	3,724
Stonnington	1,484	1,753	8,547	3,563
2017				
Bayside	1,194	1,279	7,251	3,331
Boroondara	3,165	2,552	14,025	5,433
Glen Eira	1,511	1,818	7,945	4,157
Stonnington	1,951	1,605	9,953	3,992

Source: ABS Counts of Australian Businesses, including Entries and Exits 2009 and 2017

Effective job density

Effective Job Density (EJD) is a measure of a location's concentration of jobs based on their accessibility, which is closely linked to the transport networks and infrastructure. High EJD can be a result of having a large pool of employment nearby or being well connected to more distant employment.

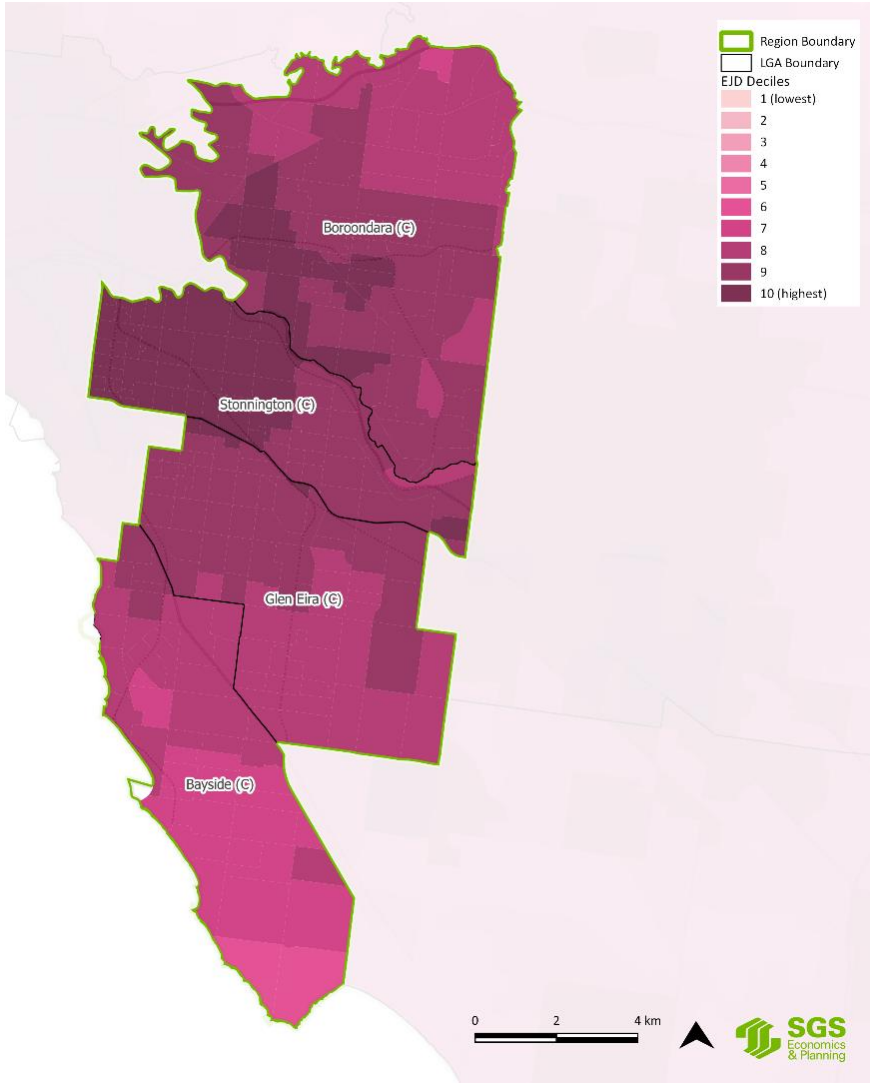
This indicator helps to understand how accessible a city is, how employment is distributed and whether residents enjoy a range of employment opportunities. People who live in areas with higher EJD have a greater chance of matching their skills and aspirations to available jobs, leading to benefits including opportunities for increased skill development and job satisfaction.

An area with fewer jobs can also have high EJD by locating close to another area with high EJD.

Higher EJD is also an indicator of increased agglomeration, which is the economic benefit caused by interaction and technical spill overs between firms. This is particularly relevant to knowledge-intensive industries. Figure 24 and Figure 25 show EJD in 2016 and by sector.

- The Inner South East Metro Region's levels of EJD reflect the level of public transport access and high job density.
- The outer area of the City of Bayside has lower levels of EJD. This area also has less public transport and a lower density of employment, while being further from the CBD.
- By industry, the EJD for population-serving industries is high across the entire region.
- There are high levels of EJD in the knowledge-intensive and health and education sector across most of the region, with slightly lower levels in the outer areas of City of Bayside.
- The City of Stonnington has the highest EJD in the industrial sector. Boroondara and Glen Eira LGAs also have areas with higher industrial sector EJD.

FIGURE 24: EFFECTIVE JOB DENSITY (2018)



Source: SGS Economics and Planning, 2018.

FIGURE 25: EFFECTIVE JOB DENSITY BY SECTOR (2018)

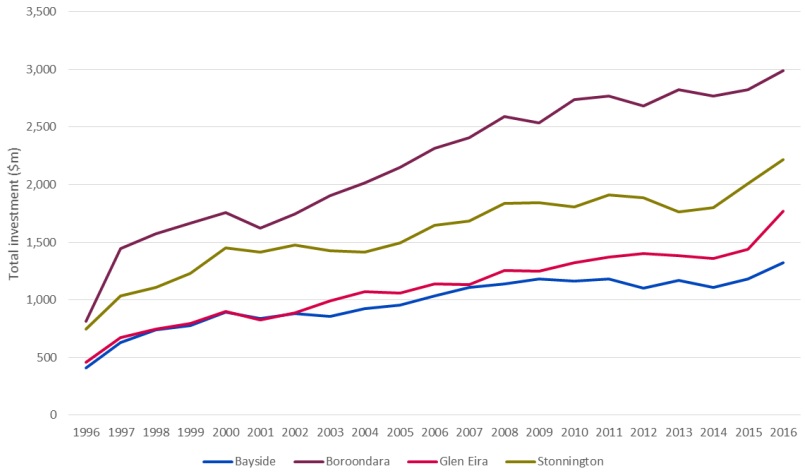
Source: SGS Economics and Planning, 2018.

Capital investment

Capital investment refers to funds invested in enterprise. High levels of investment indicate a growing economy as firms are investing more funds into their businesses. Figure 26 shows total capital investment by LGA.

- All LGAs in the region experienced increased total capital investment between 1996 and 2016.
- The City of Boroondara experienced the most growth followed by the City of Stonnington. Drivers include growth in business formation and job density across these two LGAs.
- Glen Eira and Boroondara LGAs experienced lower total capital investment. Starting at a similar level in 1996 the City of Glen Eira has experienced stronger growth for most of this period.
- There was a noticeable increase in capital investment since 2015, particularly in the City of Glen Eira.

FIGURE 26: TOTAL INVESTMENT (1996-2016)

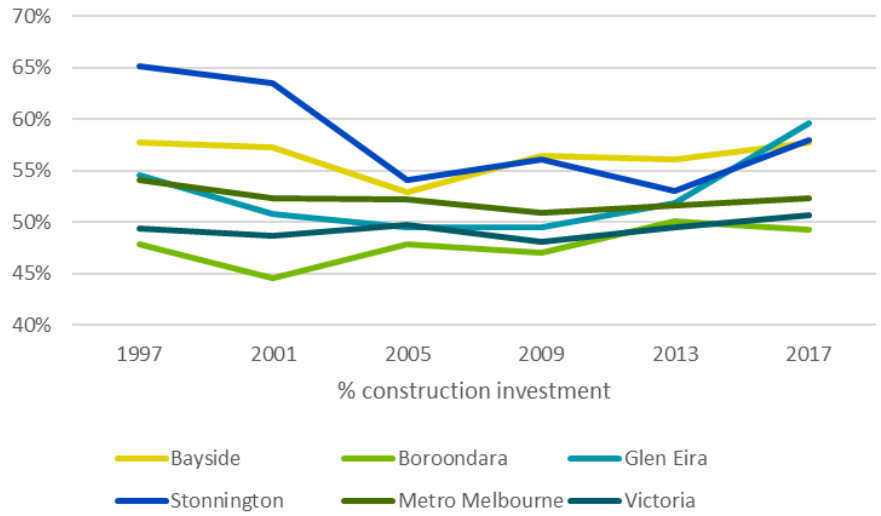


Source: NIEIR 2018

Figure 27 and Figure 28 show the share of total investment that is comprised of construction investment and equipment investment respectively.

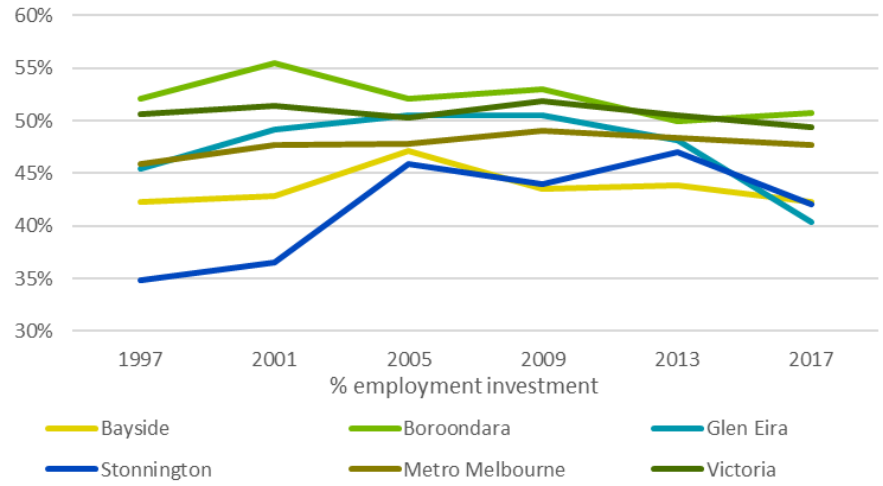
- The City of Glen Eira and to a lesser extent the City of Stonnington had notable growth in contruction investment from 2013 to 2017 compared to other areas and metropolitan Melbourne and Victoria.
- Bayside and Boroondara LGAs had a slight decrease in construction investment from 2016 to 2017.
- Equipment invesment is generally inverse of the construction investment trends. The City of Glen Eira reduction in equipment investment began in 2009. The City of Stonnington experienced a decrease in equipment investment from 2013.
- The City of Boroondara was the only LGA with equipment investment greater than the metropolitan Melbourne and Victorian average and the only LGA to experience a slight increase from 2013 to 2017.

FIGURE 27: CONSTRUCTION INVESTMENT (1996-2017)



Source: NIEIR 2018

FIGURE 28: EQUIPMENT INVESTMENT (1996-2017)



Source: NIEIR 2018

Labour productivity

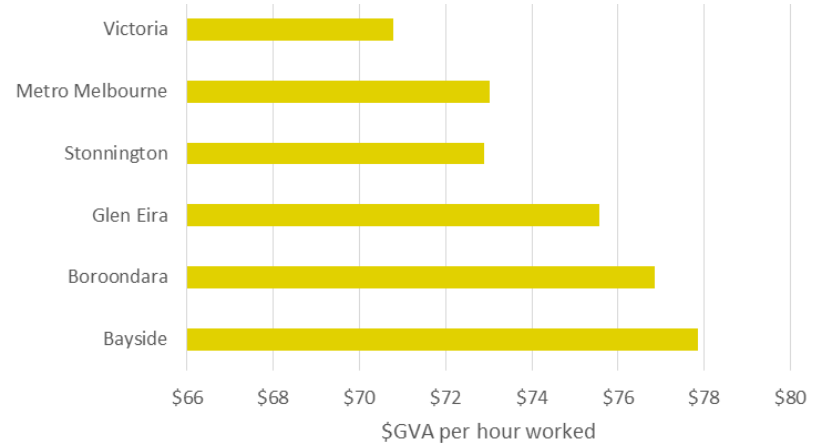
Labour productivity is a measure of efficiency of labour, expressed as the GVA generated per hour worked. Variations in labour productivity can be due to factors such as worker skills, quality of capital, infrastructure available, and adoption of technology.

A location's productivity helps to understand how efficient and effective its workers are at producing goods and services.

Figure 29 and Figure 30 show labour productivity by LGA.

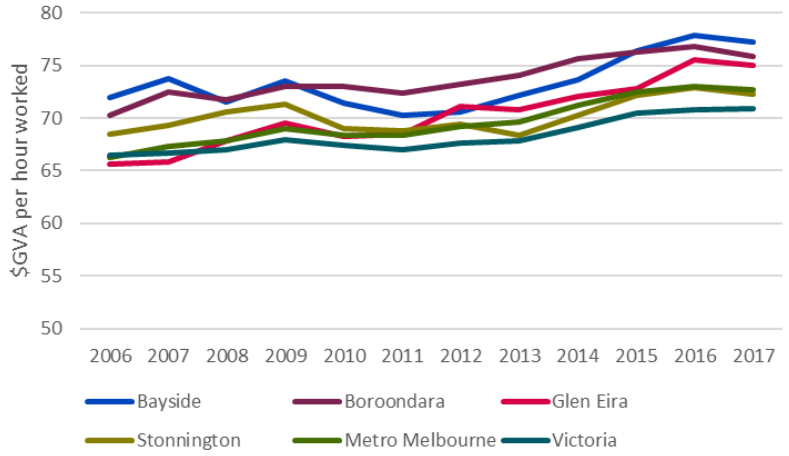
- Bayside, Boroondara and Glen Eira LGAs all experienced higher levels of labour productivity than the City of Stonnington, metropolitan Melbourne and Victoria.
- The entire region had higher overall GVA per hours worked than the Victorian and metropolitan Melbourne average, except for the City of Stonnington, which was lower than the metropolitan Melbourne average.
- The City of Glen Eira, which had the lowest GVA per hour worked in 2006, experienced steady growth between 2006 and 2017 to have the third highest GVA per hours worked after Bayside and Boroondara LGAs by 2017.
- City of Stonnington experienced small overall growth in GVA per hours worked over the same period.

FIGURE 29: LABOUR PRODUCTIVITY BY LGA (2016)



Source: NIEIR 2018

FIGURE 30: LABOUR PRODUCTIVITY (2006-2017)

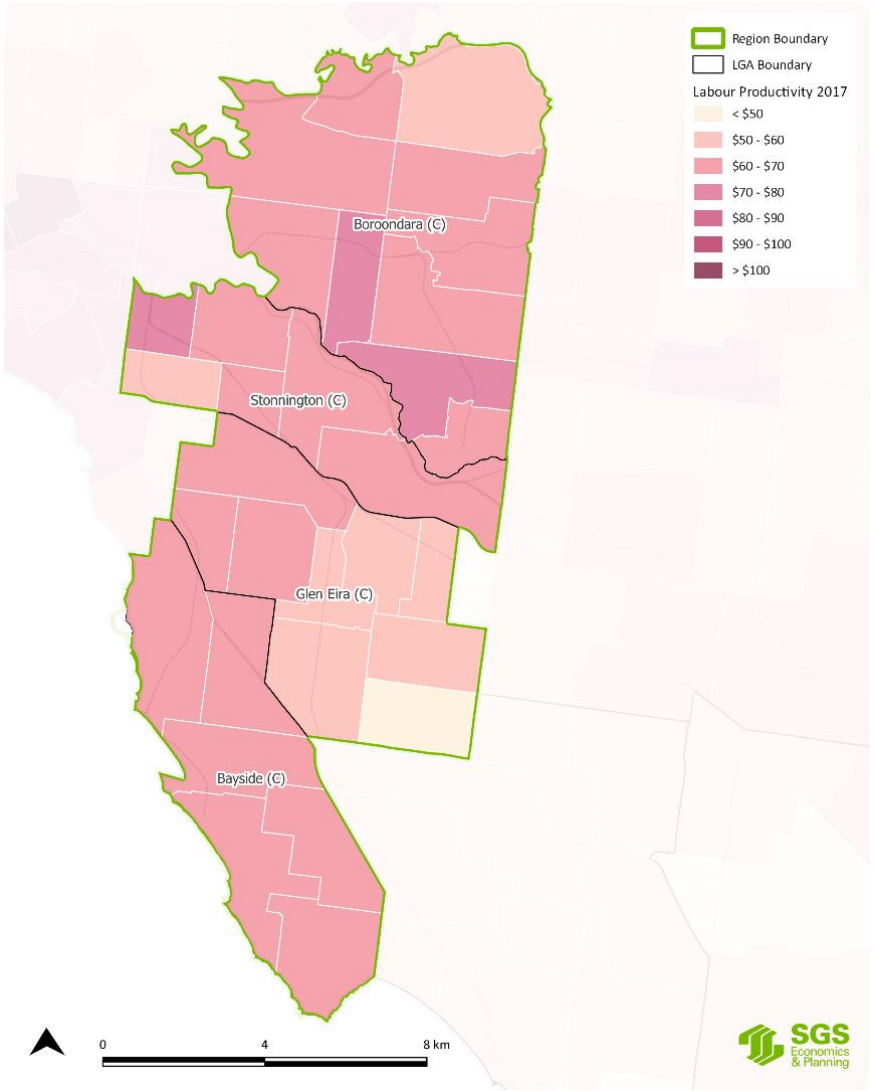


Source: NIEIR 2018

Figure 31 illustrates labour productivity at the small area level.

- The region showed overall high labour productivity with lower productivity in outer areas of the City of Glen Eira.
- Inner areas of the City of Stonnington and specific areas of Boroondara LGA had the highest labour productivity. The lower labour productivity in the south west corner of inner Stonnington may be driven by social housing in that area.

FIGURE 31: LABOUR PRODUCTIVITY (2016)



Source: ABS Census 2016

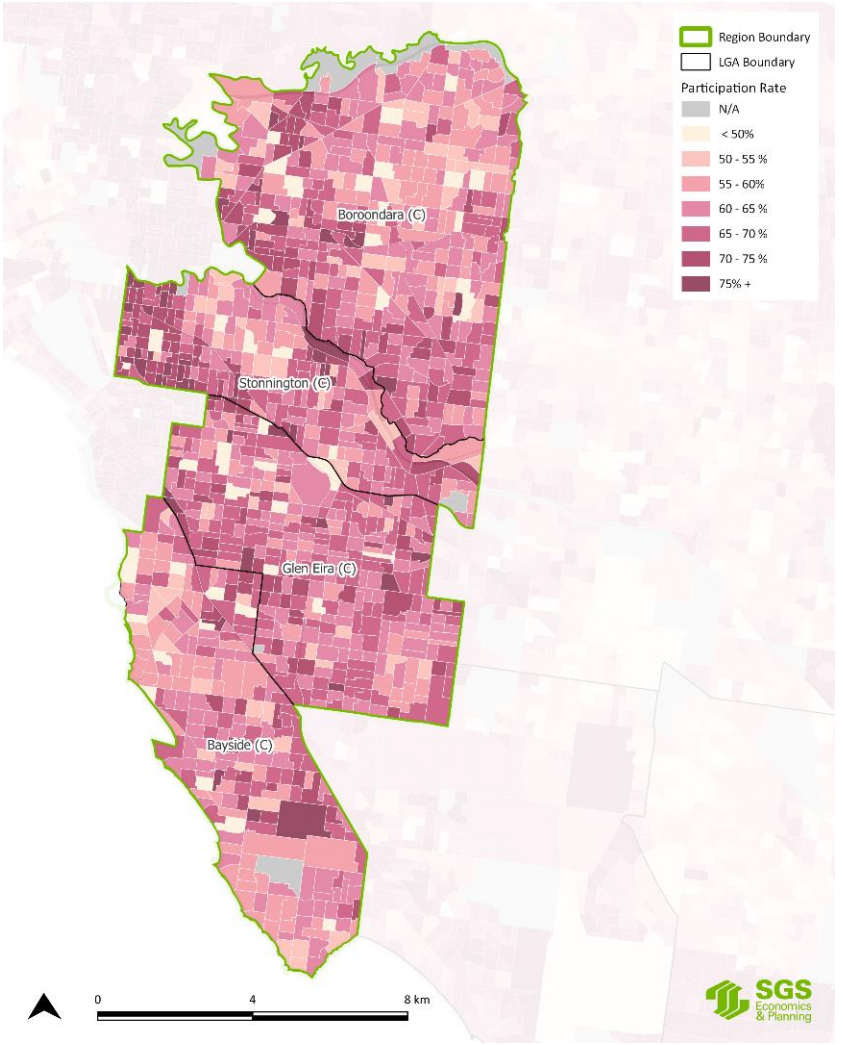
Participation rate

The participation rate is a measure of the portion of the population that is active in the economy's labour force. It refers to the proportion of the total working age population that is either employed or are actively looking for work. The participation rate helps to understand labour utilisation and dependency, and the strength of the local workforce.

Figure 32 shows the participation rate by SA1 in 2016.

- Labour participation rates, illustrated in Figure 32, vary across the region. Areas with higher participations rates are similar to those with higher GVA (Figure 20: Total GVA (2016)), employment density (Figure 15), and areas with higher dwelling density (Figure 69).
- Pockets with lower participation rates may reflect an older age profile in that area, as is likely the case in those areas of the City of Bayside and the City of Boroondara with lower participation rates.

FIGURE 32: PARTICIPATION RATE BY SA1 (2016)



Source: ABS Census 2016

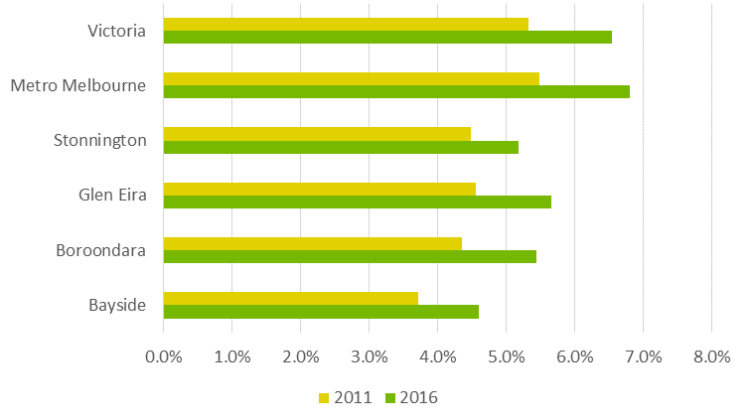
Unemployment

The unemployment rate is a measure of the people in the labour force actively looking for work.

Figure 33 shows the change in the unemployment rate from 2011 to 2016, while Figure 34 shows the spatial distribution of unemployment rates in 2016.

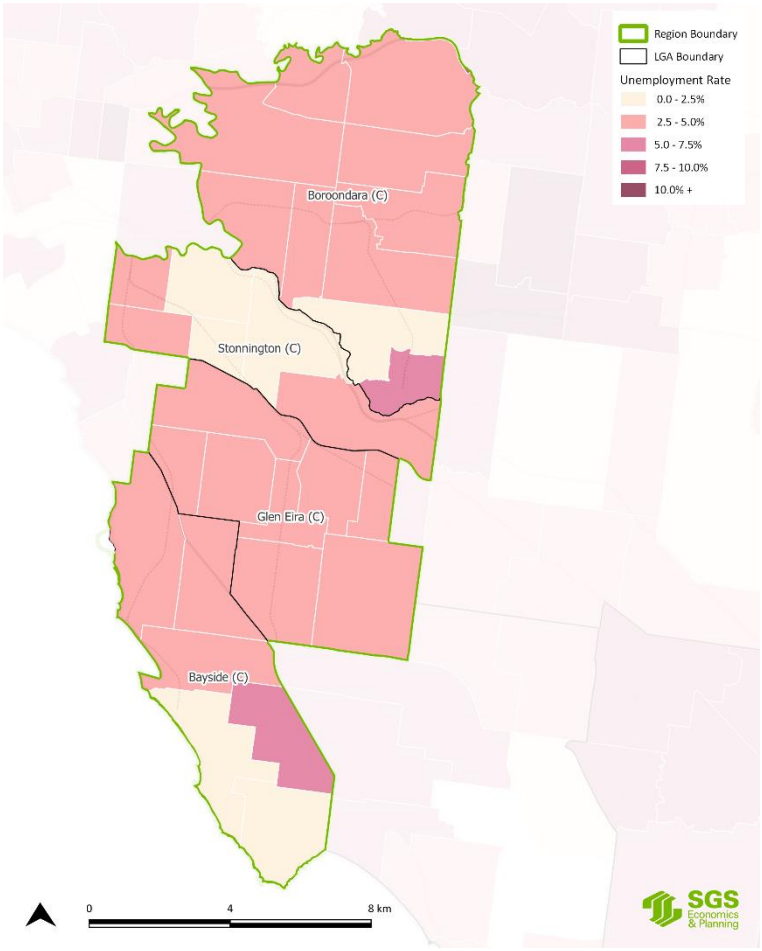
- The rate of unemployment increased in all LGAs across the Inner South East Metro Region between 2011 and 2016, in line with broader trends across Victoria.
- All LGAs had lower unemployment rates than metropolitan Melbourne and Victoria.
- The City of Glen Eira had the highest unemployment rate of the region while the City of Bayside had the lowest rate of unemployment.
- Most areas had low rates of unemployment, with two pockets of higher unemployment. In the City of Boroondara this may be due to the location of public housing in this area.

FIGURE 33: UNEMPLOYMENT RATE BY LGA (2011 AND 2016)



Source: ABS Census 2011 and 2016.

FIGURE 34: UNEMPLOYMENT RATE (2016)



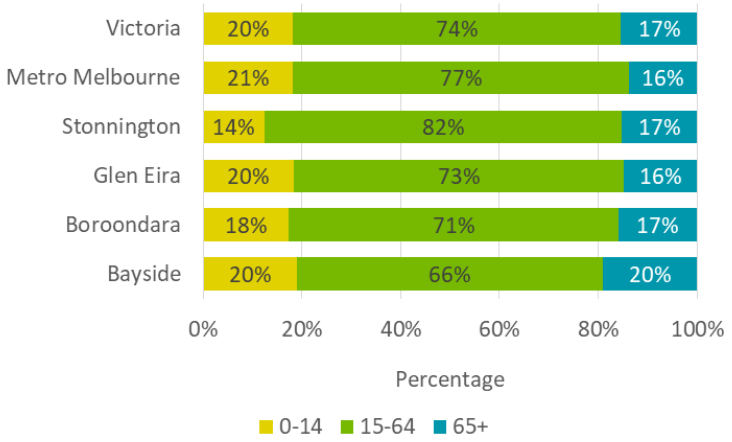
Source: Australian Government, Department of Jobs and Small Business 2018

Change in working age population

Working age population is defined as the population aged between 15 and 64. The proportion of working age population in an area provides an insight into its labour force composition. Figure 35 shows the age distribution in 2016, while Figure 36 presents the share of change (between 2011 and 2016) driven by each age group.

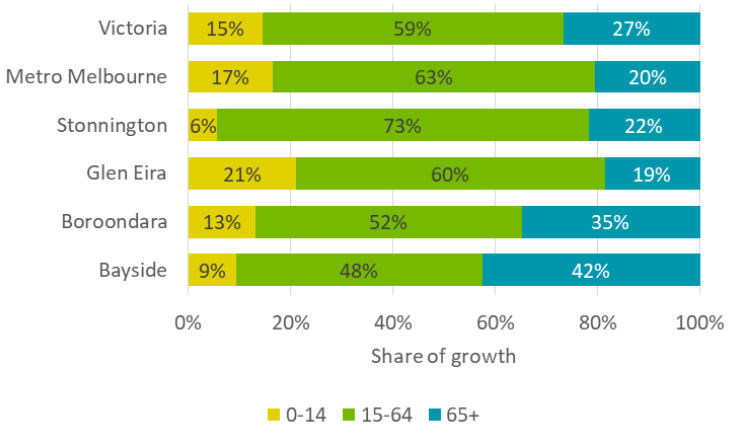
- The City of Stonnington has the highest proportion of working age population in the region, higher than metropolitan Melbourne and Victoria.
- The City of Bayside has the highest proportions of children and people aged 65+, above metropolitan Melbourne and Victoria.
- Figure 36 shows the structural changes to the working and non-working age groups in the Inner South East Metro Region. The 65+ age group reveals the highest growth rate in every LGA.
- The City of Stonnington saw a higher increase in working age population between 2011 and 2016 in contrast to the rest of the region, with the exception of City of Bayside, metropolitan Melbourne and Victoria.
- Working age range (15-64 years) has some limitations. While there are still a higher number of older Australians not in the labour force, as people are living longer and working longer there is a growing number of people who work past 65 years of age.

FIGURE 35: AGE GROUP POPULATION DISTRIBUTION (2016)



Source: ABS Census 2016, SGS Economics and Planning, 2018

FIGURE 36: SHARE OF POPULATION CHANGE BY AGE (2011-2016)



Source: ABS Census 2011 and 2016, SGS Economics and Planning, 2018

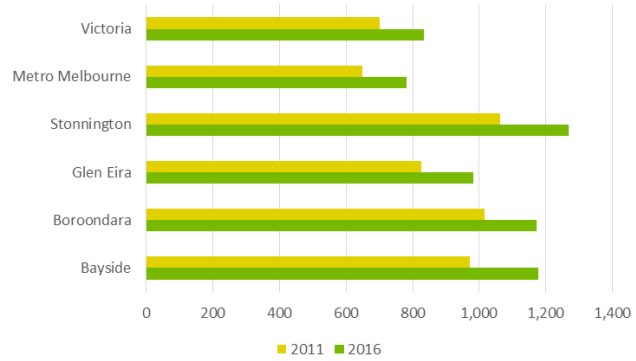
4.3 Economic wellbeing of residents

Household income

Figure 37 and Figure 38 show the equivalised[3] total weekly household income by LGA in the Inner South East Metro Region between 2011 and 2016.

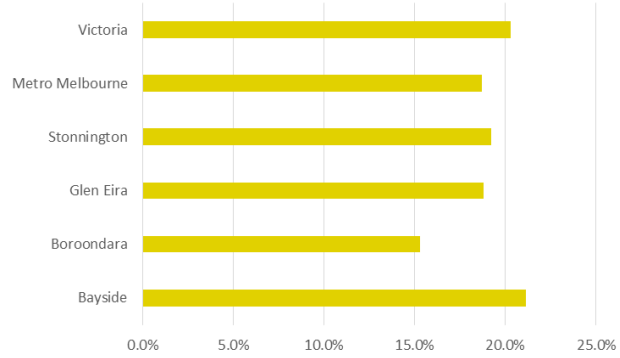
- The equivalised total weekly income in the Inner South East Metro Region increased between 2011 and 2016 at similar rates as metropolitan Melbourne and Victoria.
- Higher household incomes than metropolitan Melbourne and Victoria reflect the high levels of education and access a high density of knowledge-intensive industries and health care and education industries, as shown in the business formation trends.
- The City of Stonnington had the highest equivalised income in 2016 with household income lower in the City of Glen Eira than other LGAs in the Inner South East Metro Region.
- The change in household income, as shown in Figure 38, shows the City of Bayside to have the greatest increase in equivalised household income between 2011 and 2016, higher than metropolitan Melbourne and Victoria.
- The City of Boroondara experienced the smallest change in equivalised household income between 2011 and 2016, below metropolitan Melbourne and Victoria.

FIGURE 37: MEDIAN TOTAL WEEKLY HOUSEHOLD INCOME (EQUIVALISED) (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 38: CHANGE MEDIAN TOTAL WEEKLY HOUSEHOLD INCOME (EQUIVALISED) (2011-2016)



Source: ABS Census 2011 and 2016

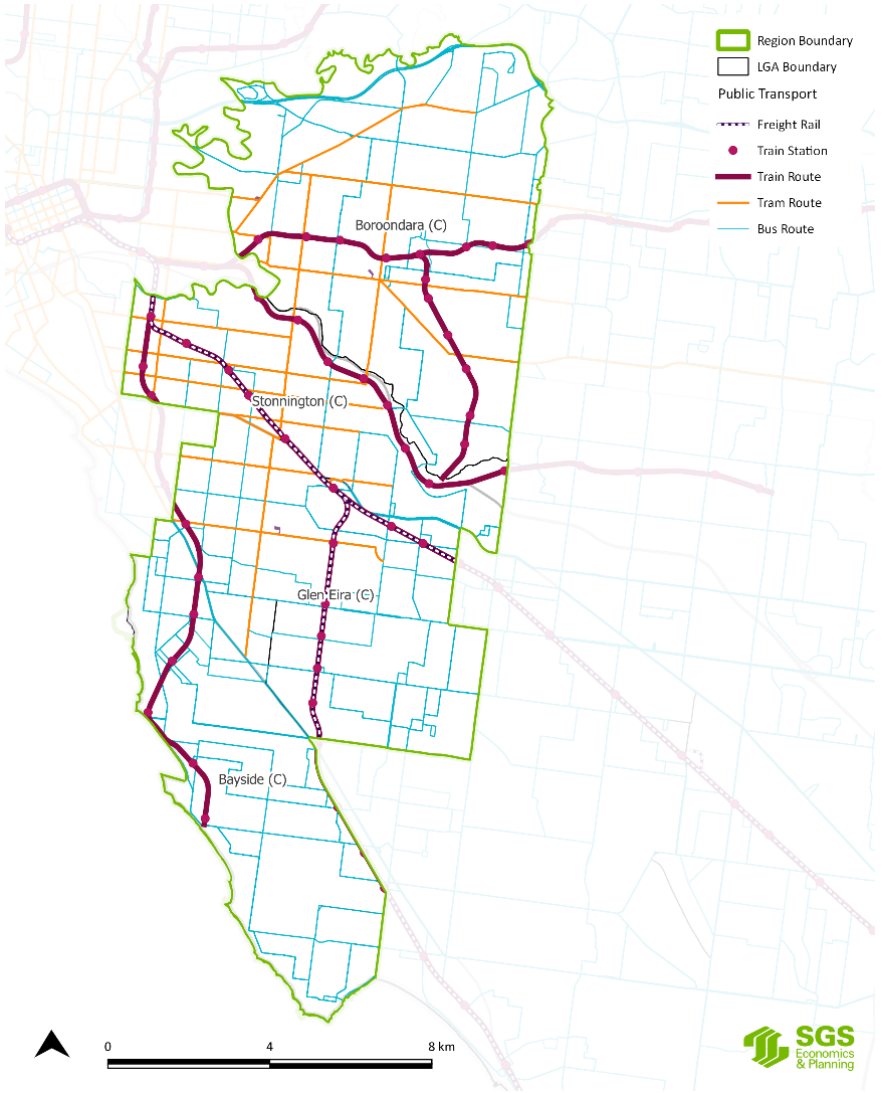
[3] Equivalised total household income is household income adjusted to facilitate comparison of income levels between households of differing size and composition, reflecting that a larger household would normally need more income than a smaller household to achieve the same standard of living.

Public transport

Figure 39 illustrates the public transport routes that service the Inner South East Metro Region.

- The region is well serviced, with rail connections to the CBD supported by a network of trams in inner areas and buses.
- Metro train services in the region include the Sandringham and Alamein lines and sections of the Frankston, Ringwood corridor and Pakenham/Cranbourne corridor.
- The rail hub at Caulfield provides access to regional passenger services to Gippsland via the Pakenham/Cranbourne corridor.
- The tram network provides connections to the city and between suburbs in the northern and central areas of the region.
- The 703 SmartBus service provides an orbital connection from Middle Brighton to Blackburn while the 900 service connects Caulfield with Rowville.

FIGURE 39: PUBLIC TRANSPORT ROUTES (2017)

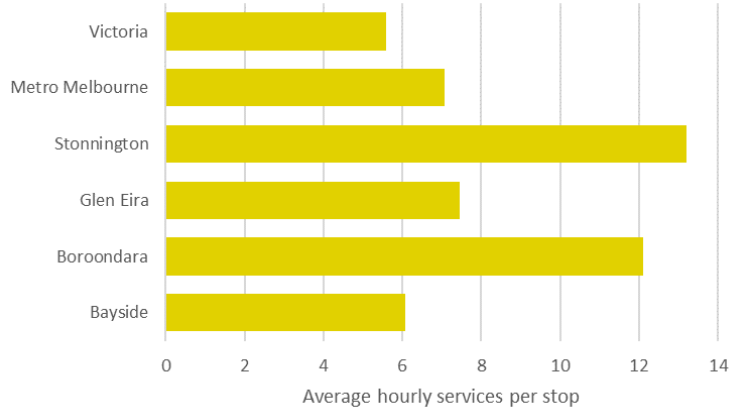


Source: Public Transport Victoria 2017

Figure 40 shows average hourly services per stop.

- The high number of average hourly services in Boroondara and Stonnington LGAs reflect the relatively dense train and tram network within those LGAs.
- The City of Bayside service levels were the lowest in the region and below the metropolitan Melbourne average.

FIGURE 40: AVERAGE HOURLY SERVICES PER STOP (2017)



Source: Public Transport Victoria 2017

Figure 41 illustrates the public transport service levels, reflecting service frequency and effective access the transport service provides.

- The parts of the region closest to the CBD have the highest frequency of public transport services.
- The outer areas of the City of Boroondara and to a lesser extent the City of Stonnington have higher frequency of public transport services than the outer areas the Glen Iris and Bayside LGAs.

FIGURE 41: PUBLIC TRANSPORT SERVICE LEVELS (2017)

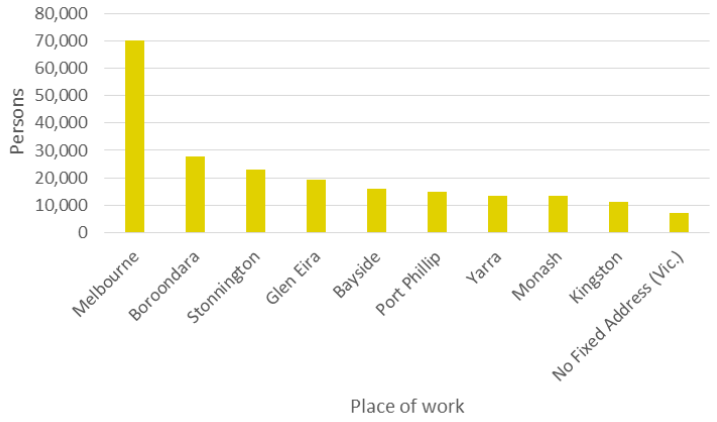
Source: Public Transport Victoria 2017

Travel origins and destinations

Travel origins and destinations refer to the journey to work origins and destinations. Figure 42 and Figure 43 illustrate the most common work destinations and origins for residents in the Inner South East Metro Region, respectively.

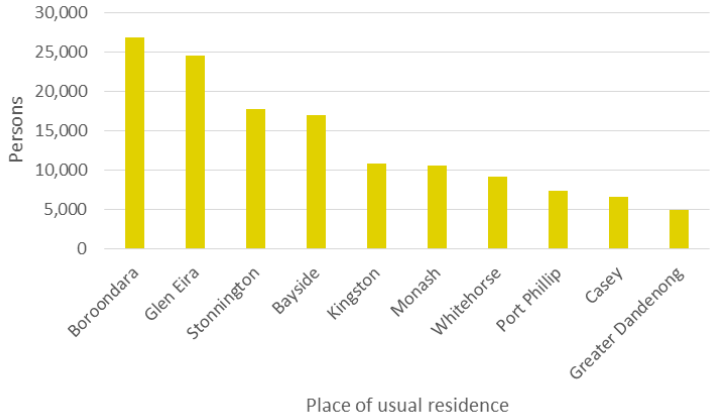
- The City of Melbourne is the most popular work destination for residents of the Inner South East Metro Region. This fits with the highly educated and skilled profile of residents accessing the large number of knowledge jobs in the CBD.
- A smaller number of workers predominantly travel to LGAs adjoining the Inner South East Metro Region and the south east corridor of Melbourne.
- Most workers in the Inner South East Metro Region come from within the region or adjoining LGAs.
- The work origins and destinations indicate the region is reasonably self-contained to the south east areas of Melbourne. Connection with Melbourne's north and west, at least in terms of employment, appears to be negligible.

FIGURE 42: TOP 10 WORK DESTINATION (PLACE OF WORK) BY LGA (2016)



Source: ABS Census 2016

FIGURE 43: TOP 10 WORKER ORIGINS BY LGA (2016)

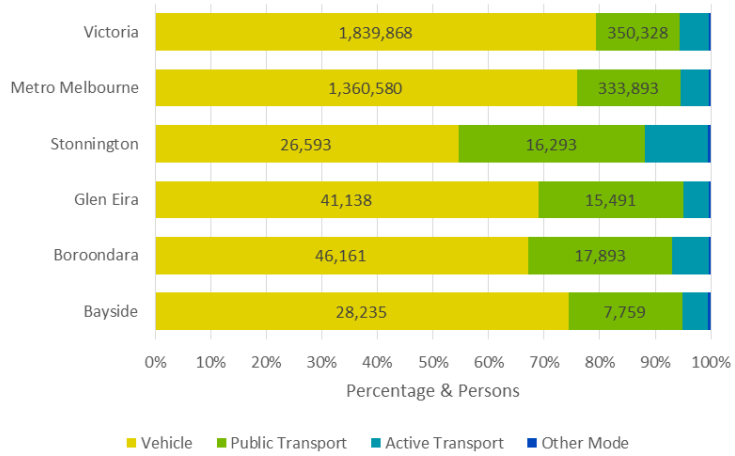


Source: ABS Census 2016

Figure 44 illustrates the mode of journey to work for residents in the Inner South East Metro Region.

- Vehicle was the most common mode for journey to work in all LGAs in the region. However, the number and proportion of vehicle trips were less than the metropolitan Melbourne and Victorian averages.
- The City of Stonnington had the highest share of public transport and active transport trips of the region, higher than the metropolitan Melbourne average. This reflects the access to high average hourly service levels shown in Figure 40 and dense public transport networks within the LGA.
- Boroondara, Glen Eira and Bayside LGAs had similar shares of vehicle trips and in line with the metropolitan Melbourne average.

FIGURE 44: MODES OF JOURNEY TO WORK (2016)



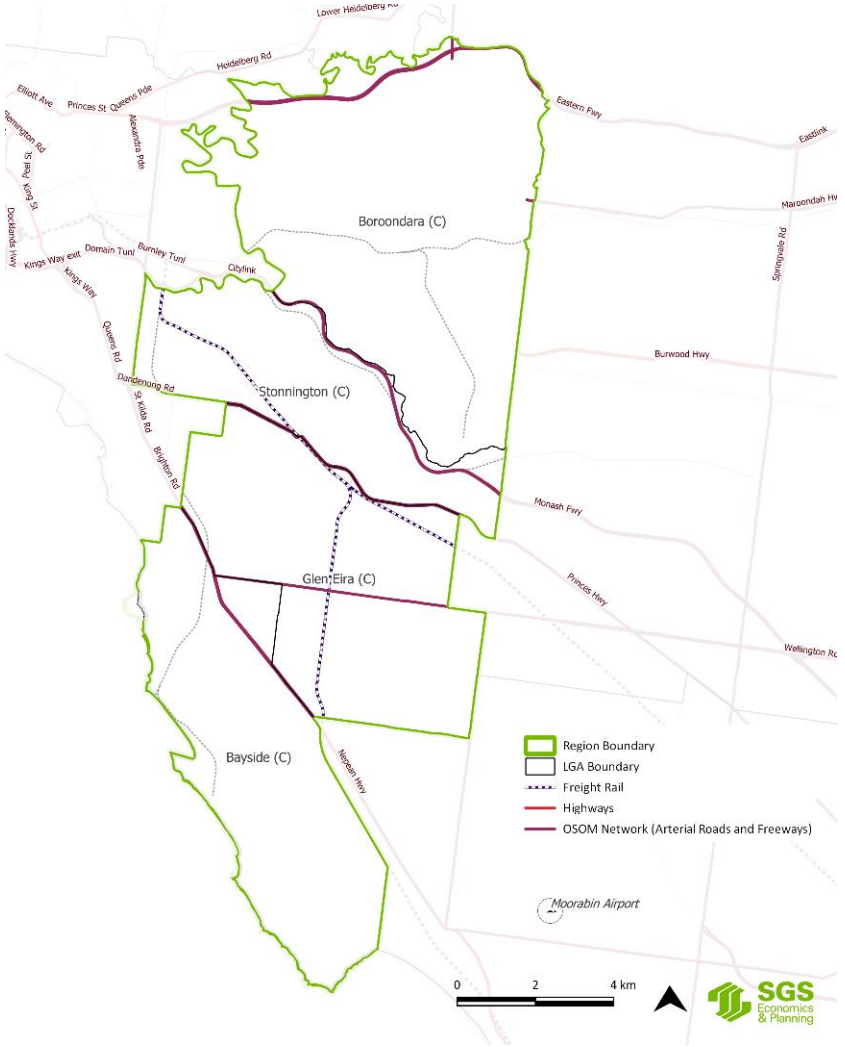
Source: ABS Census 2016

Freight and road networks

The rail and road network, made up of arterial roads and freeways, is the supporting infrastructure for the local, regional, interstate and overseas movement of goods.

Figure 45shows the freight and road network in the Inner South East Metro Region. The region is connected to Melbourne and regional Victoria by four key east-west arterial roads and freeways.

FIGURE 45: FREIGHT AND ROAD NETWORKS



Source: SGS Economics and Planning 2018

Freight and business trips

Table 7 illustrates the origins and destinations of freight and business trips by LGA.

- More freight and business trips came to all LGAs in the region than originated from them highlighting the region's role as an economic location.
- The City of Boroondara was the destination for the highest number of freight and business trips.

TABLE 7: ORIGINS AND DESTINATIONS OF TRIPS BY TYPE AND LGA (2015)

Column heading	Freight		Business	
LGA	2015 Origin	2015 Destination	2015 Origin	2015 Destination
Bayside	1,119	7,560	1,167	7,296
Boroondara	1,224	13,292	1,265	13,888
Glen Eira	1,240	10,596	1,252	8,956
Stonnington	988	10,940	1,016	9,580

Source: MABM (KPMG) 2018

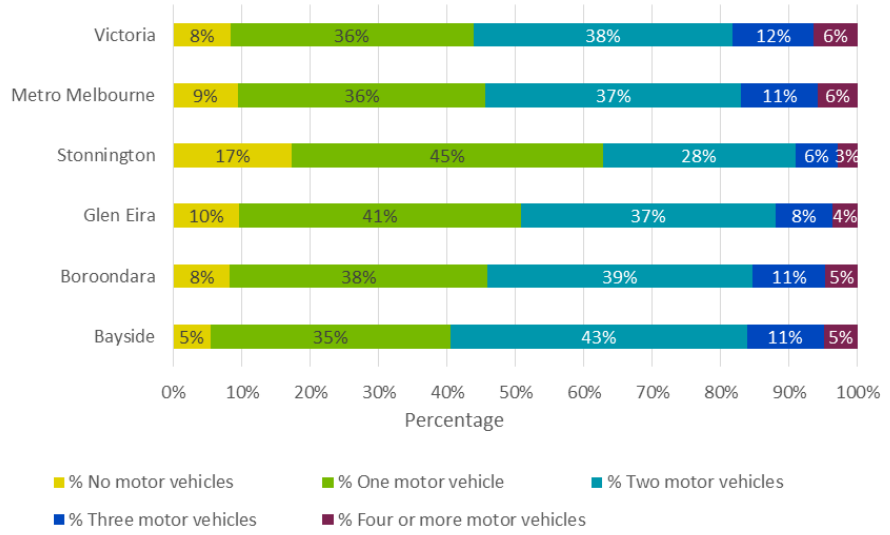
Households with vehicles

Household motor vehicle ownership often correlates with the diversity of transport modes available in an area. Households in areas with fewer transport options tend to own more motor vehicles. Figure 46 illustrates the breakdown of the number of motor vehicles owned by households across the LGAs in the Inner South East Metro Region in 2016.

Figure 47 shows the change in household motor vehicle ownership between 2011 and 2016.

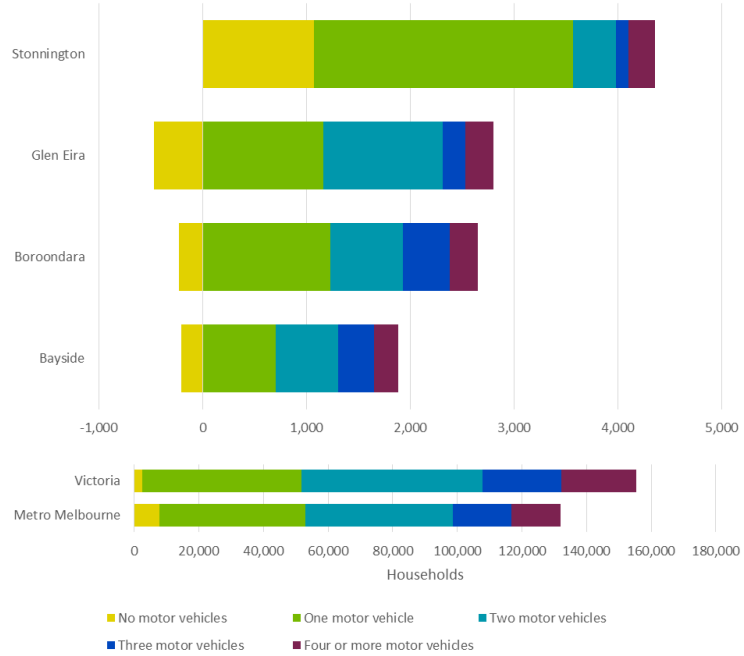
- The City of Stonnington has the lowest rates of car ownership in the region, possible because of the younger working age population, the greater mix in dwelling type and good public transport access.
- Glen Eira and Stonnington LGAs had the highest proportions of households with one motor vehicle.
- Two-car households are more common in Bayside and Boroondara LGAs, possibly because of high household income. The number of people employed within the region and the types of trips associated with that may reflect a preference for cars over trams or buses.
- The City of Stonnington's high proportion of no-car households is a recent trend, representing an increase between 2011 and 2016. This may be linked to the changing age profile of the area.
- Despite the region's access to public transport local employment, with the exception of the City of Stonnington, car ownership increased in all LGAs in the region between 2011 and 2016.

FIGURE 46: HOUSEHOLD MOTOR VEHICLE OWNERSHIP (2016)



Source: ABS Census 2016

FIGURE 47: CHANGE IN HOUSEHOLDS WITH MOTOR VEHICLES (2011-2016)

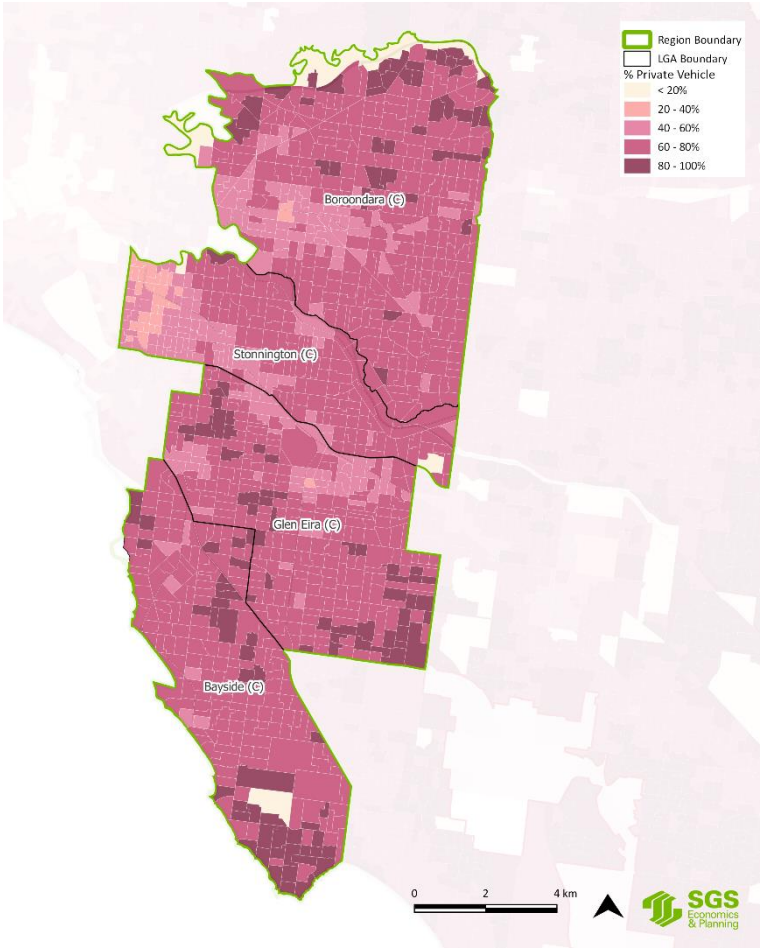


Source: ABS Census 2011 and 2016

Figure 48 shows the spatial representation of journey to work by private vehicles.

- In most areas, 40 per cent or more trips are by car.
- The lowest rates of car trips are in the inner areas of the City of Stonnington along with the areas of Stonnington, Glen Eira and Boroondara LGAs that are serviced by train and/or tram.

FIGURE 48: JOURNEY TO WORK BY PRIVATE VEHICLES (2016)



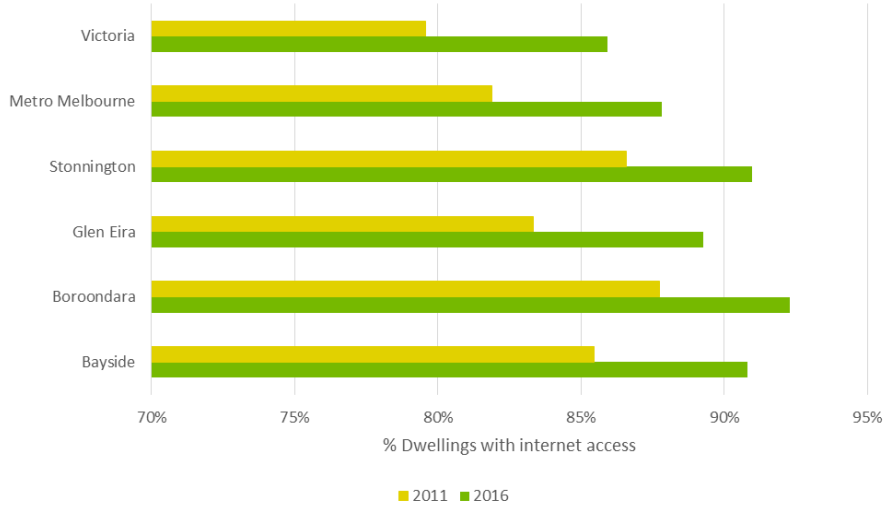
Source: ABS Census 2016

Access to internet

Access to the internet suggests level of access to and engagement with digital media and communication of households.

- All areas in the region have a high proportion of dwellings with internet access, higher than metropolitan Melbourne and Victoria.
- The percentage of dwellings with internet access has increased from 2011 to 2016.

FIGURE 49: DWELLINGS WITH INTERNET ACCESS (2011-2016)



Source: ABS Census 2011 and 2016

4.4 Employment and skills

Skill levels

The Australian and New Zealand Standard Classification of Occupations (ANZSCO) classifies employment skill levels into 5 categories, with Skill Level 1 being the highest, and Skill Level 5 being the lowest (Table 8).

TABLE 8: SKILL LEVEL DESCRIPTIONS

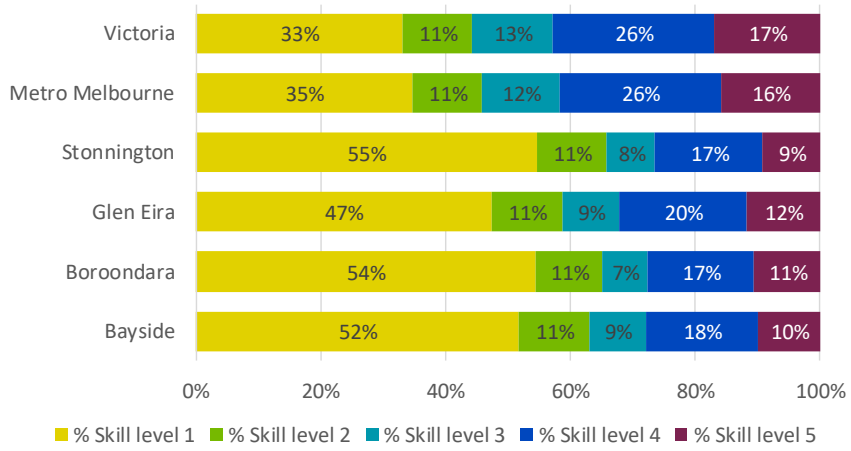
Skill Level	Skill Level Description
Skill Level 1	Occupations at Skill Level 1 have a level of skill commensurate with a bachelor's degree or higher qualification. At least five years of relevant experience may substitute for the formal qualification.
Skill Level 2	Occupations at Skill Level 2 have a level of skill commensurate with either an Associate Degree, Advanced Diploma or Diploma. At least three years of relevant experience may substitute for the formal qualifications listed above.
Skill Level 3	Occupations at Skill Level 3 have a level of skill commensurate with a Certificate IV or Certificate III including at least two years of on-the-job training. At least three years of relevant experience may substitute for the formal qualifications listed above.
Skill Level 4	Occupations at Skill Level 4 have a level of skill commensurate with Certificate II or III. At least one year of relevant experience may substitute for the formal qualifications listed above.
Skill Level 5	Occupations at Skill Level 5 have a level of skill commensurate with Certificate I or compulsory secondary education. In some instances, no formal qualification or on-the-job training may be required.

Source: ANZSCO

Figure 50 shows skill level in 2016 as a percentage of the total working population. For the additional resident workers in each LGA (between 2011 and 2016). Figure 51 presents the share of change captured by each skill level.

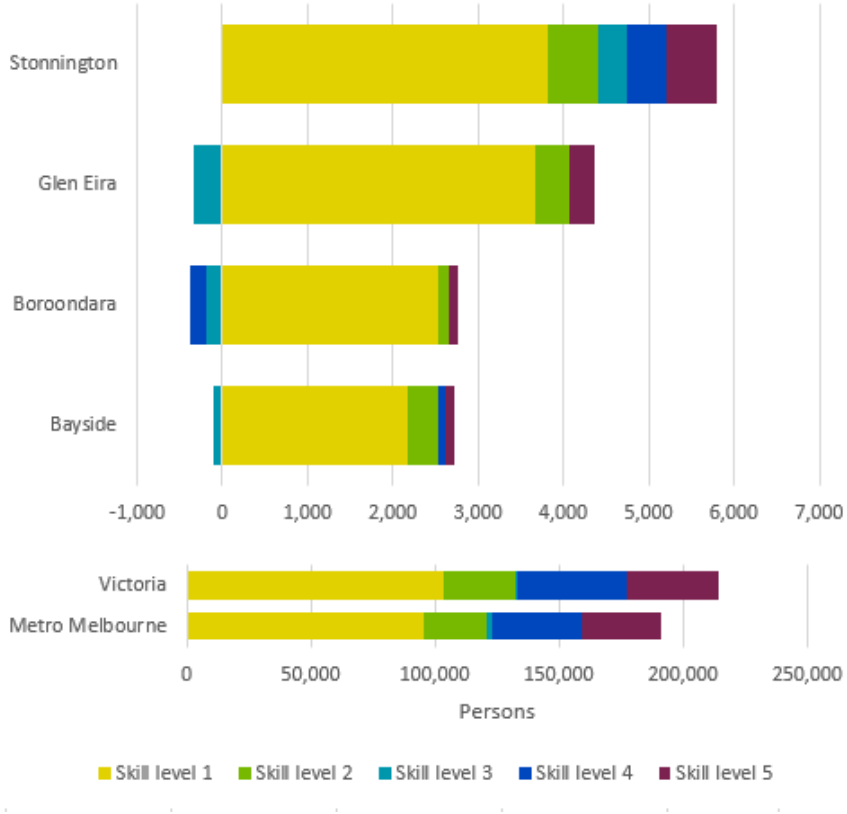
- The Inner South East Metro Region has a highly skilled workforce, with an average of 63 per cent Skill Level 1 or 2 attainment across all LGAs, far higher than Victorian and metropolitan Melbourne averages.
- The proportion of people with Skill Level 3 or 4 attainment aligns with the metropolitan and State averages, while the key regional difference is a lower proportion of people with Skill Level 5 qualifications.
- Across the region, the greatest increase in skill levels between 2011 and 2016 was in Skills Level 1 - post-secondary school qualifications. This may be explained by the Australian immigration policy which is focused on skilled migration. However, the Inner South East Metro Region has a lower general rate of overseas migration than other regions.
- Bayside, Boroondara and Glen Eira LGAs saw a decrease in Skill Level 3 between 2011 and 2016 and Boroondara also had a decrease in Skill Level 4 over the same period.
- Skill Level 5 increased in all LGAs between 2011 and 2016.

FIGURE 50: SKILL LEVELS AS PERCENTAGE OF TOTAL WORKING POPULATION (PLACE OF USUAL RESIDENCE) (2016)



Source: ABS Census 2016

FIGURE 51: SHARE OF CHANGE IN SKILL LEVELS (PLACE OF USUAL RESIDENCE) (2011-2016)



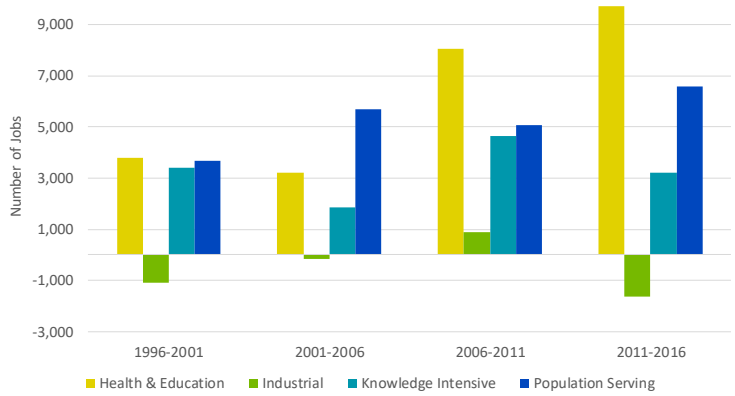
Source: ABS Census 2011 and 2016

Employment concentration of industries 2016

Figure 52 shows the historic change in the number of jobs by the four industry classifications. Figure 53 illustrates the changes in the share of each sector in the Inner South East Metro Region between 1996 and 2016.

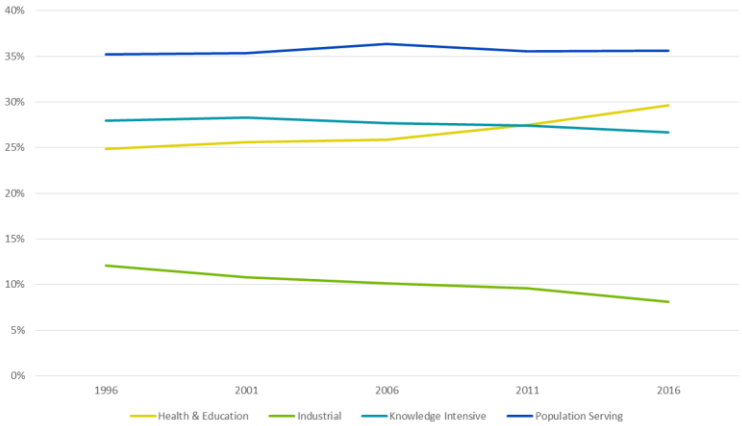
- The Inner South East Metro Region's high proportion of employment in population-serving industries remained stable between 1996 and 2016. The actual number of jobs in population-serving industries increased every year over this period.
- Knowledge-intensive employment, while high between 1996 and 2016, has decreased as a proportion of employment over this period. At the same time the actual number of jobs in knowledge-intensive employment increased every year.
- Health and education employment saw a gradual increase to become the second highest proportion of jobs in the region.
- Industrial jobs, already a small share of the region's jobs in 1996, continued to decrease as a share of total employment between 1996 and 2016. However, the actual number of industrial jobs remained stable over this period.
- The continued overall increase in average growth reflects the high job density and increased job density over time in the Inner South East Metro Region.

FIGURE 52: CHANGE IN NUMBER OF JOBS BY INDUSTRY GROUP (1996-2016)



Source: SGS Economics and Planning, 2018.

FIGURE 53: SHARE OF EMPLOYMENT BY INDUSTRY (1996-2016)



Source: SGS Economics and Planning, 2018.

Location quotient

Location quotient (LQ) is used to measure the relative concentration of industries in an area compared to a benchmark region. In this report, metropolitan Melbourne is the benchmark against which the Inner South East Metro Region is compared.

An LQ of less than 1 means an industry is underrepresented in the Inner South East Metro Region compared to metropolitan Melbourne. An LQ that is greater than 1 means that the Inner South East Metro Region has a higher concentration of that industry compared to metropolitan Melbourne. LQs in the Inner South East Metro Region are broken down into 19 industries, presented in Figure 54.

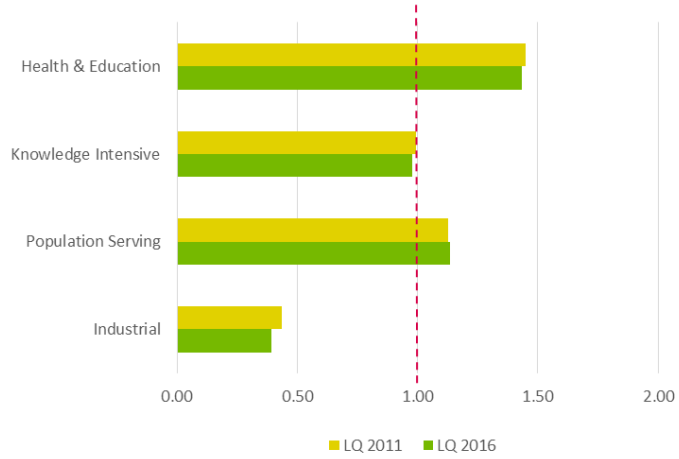
Figure 55 presents the LQ for the broad industry categories within the Inner South East Metro Region.

- The strongest sectors in the region are retail trade; rental, hiring and real estate services; professional, scientific and technical services; health care and social assistance; education and training; and accommodation and food services.
- These sectors are broadly grouped into health and education and population-serving industries.
- Despite LQ scores from 1.2 to 1.6 in these sectors, many sub-sectors in the region decreased between 2011 and 2016.
- The sectors that underwent noticeable declines in LQ were transport, postal and warehousing; retail trade; information media and telecommunications (largest decrease); and health care and social assistance.
- The LQ for administrative and support services surpassed 1 in 2016, meaning the proportion of population employed in the sector is generally in line with the figure for metropolitan Melbourne. The arts and recreation services sector is also approaching 1, growing between 2011 and 2016.
- The LQ decreased for the knowledge-intensive and industrial sectors, with lower concentrations of these industries compared to metropolitan Melbourne.

FIGURE 54: LOCATION QUOTIENT BY INDUSTRY (2011-2016)

Source: SGS Economics and Planning, 2018

FIGURE 55 LOCATION QUOTIENT BY SECTOR (2011-2016)



Source: SGS Economics and Planning, 2018.

5. SOCIAL PROFILE

SOCIAL INDICATORS

The Infrastructure Victoria social indicators that underpin this section are:

- Recent population growth
- Population by age group over time
- Age dependency
- Migration
- Cultural mix
- Housing price
- Housing typology
- SEIFA – Index of Relative Disadvantage
- DOTE index
- Education levels
- Engagement with work or study
- Hospital inpatient separations
- Access to Community Care Services
- Mental health and drug use
- Home and Community Care Services
- Ambulatory Care Sensitive Conditions
- Access to general practitioners
- Type 2 diabetes
- Life expectancy at birth
- Birth weight
- Immunisation
- Child protection substantiations
- Development vulnerability
- Crime
- Wellbeing

REGIONAL OVERVIEW

The Inner South East Metro Region's social profile is characterised by:

- established affluent, high amenity, low density residential suburbs
- an ageing population in high amenity bayside areas

SOCIAL STRENGTHS

- Highly educated and engaged young population.
- Majority of region rated as advantaged to most advantaged on common indices.
- Good access to health and community services.

SOCIAL CHALLENGES

- High cost of housing and increasing levels of rental stress.
- Limited housing choice.
- Ageing population and increasing age dependency ratios

5.1 Overview and key features

The Wurundjeri and Bunurong people of the Kulin Nation are the Traditional Owners of the lands that now make up the Inner South East Metro Region. The region has traditionally been largely residential since Melbourne's post-European development spread east of the CBD first, where the topography is undulating and the soil more fertile.

The region includes high density residential and retail precincts such as Prahran/South Yarra and Hawthorn-Glenferrie Road as well as quieter residential areas stretching out to Balwyn, Bentleigh and Black Rock. The region is a desirable residential location, with many retail businesses.

Source: Department of Environment, Land, Water and Planning, 2018.

The inner south east suburbs were some of the first to experience intensive development, with land auctions taking place only a few years after those in the Inner Metro Region. By 1860, the expanding railway network serviced Brighton and by 1906, Melbourne's first major electrified tram line connected St Kilda and Brighton.

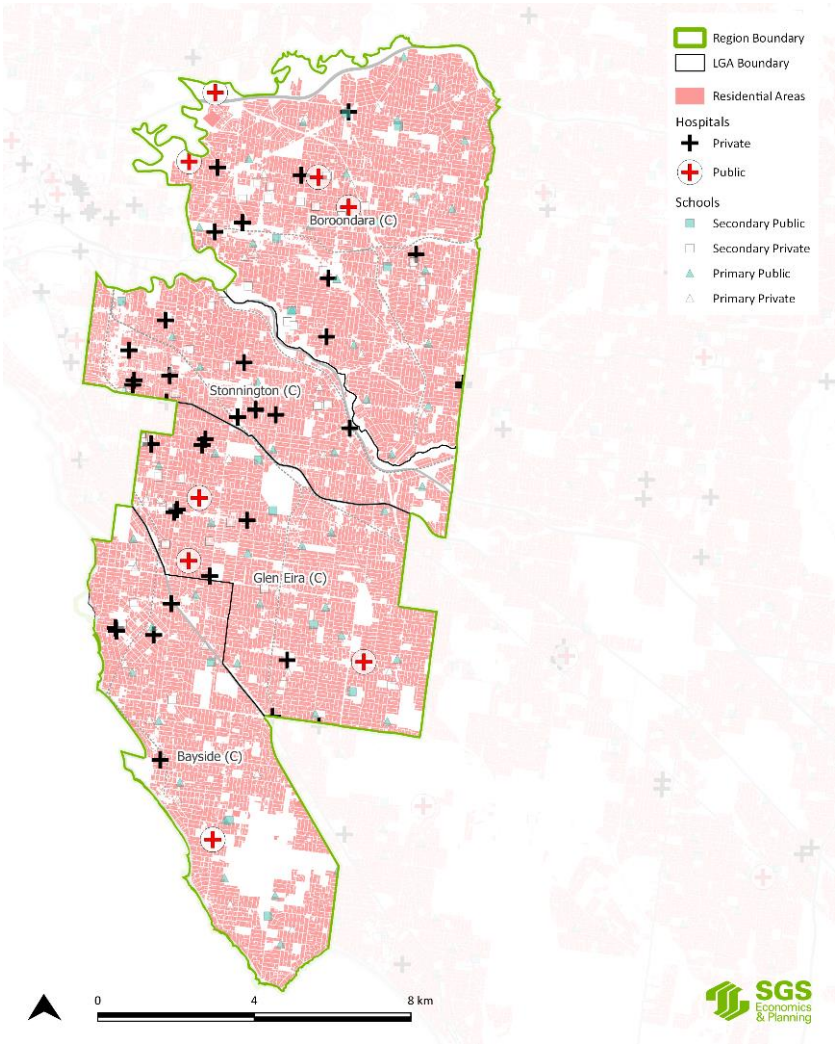
The merger between the Chisholm Institute of Technology and Monash University in 1990 created the Monash University Caulfield campus, which has grown to more than 17,000 enrolments. Two years later, Swinburne Technical College was elevated to university status and now has more than 20,000 enrolments. The 2013 opening of the Melbourne Polytechnic Prahran built on this trend.

Today, the Inner South East Metro Region is Melbourne's second smallest region by area but one of the most prosperous. The region includes Stonnington, Glen Eira and Boroondara LGAs and, on the coast, the City of Bayside, with its iconic beach boxes and a premier golf course. The high density of heritage-listed structures and gardens, alongside modern universities, retail hubs and businesses, is a testament to the region's history and ongoing prosperity.

Settlement patterns have influenced current land uses:

- The middle and east of the region is characterised by established areas with predominantly single dwelling suburbs and larger lot sizes.
- Areas closer to the CBD, developed around the turn of the last century, typically have smaller lot sizes and denser character while historically being predominantly single dwelling suburbs.
- Significant densification and redevelopment have occurred in Inner Melbourne areas and near Major Activity Centres, such as Prahran/South Yarra, Hawthorn-Glenferrie Road and Malvern/Armadale.

FIGURE 56: URBAN STRUCTURE



Source: Source: SGS Economics and Planning, 2018

5.2 Population demographics

Recent population growth

Table 9 shows the current population and recent population growth (2011 and 2016).

- Boroondara and Glen Eira LGAs supported the largest populations in the region in 2016.
- The City of Stonnington and City of Glen Eira had higher average annual growth rates between 2011 and 2016, reflecting dense redevelopment in its inner suburbs.
- With the exception of the City of Stonnington, the average annual population growth in each LGA was well below that of metropolitan Melbourne and Victoria.
- In terms of levels of absolute change, the City of Bayside experienced about half the amount of growth as the other LGAs.
- In terms of location typology, Inner Melbourne areas within the region experienced a higher rate of average annual growth and a greater change in population compared to middle Melbourne.
- Population density is consistently spread across the entire Inner South East Metro Region, as shown in Figure 57.
- Forecast population change to 2031, as seen in Figure 58, is expected to occur across the region with concentrations of growth in Inner Melbourne areas along key infrastructure corridors and near centres of activity.

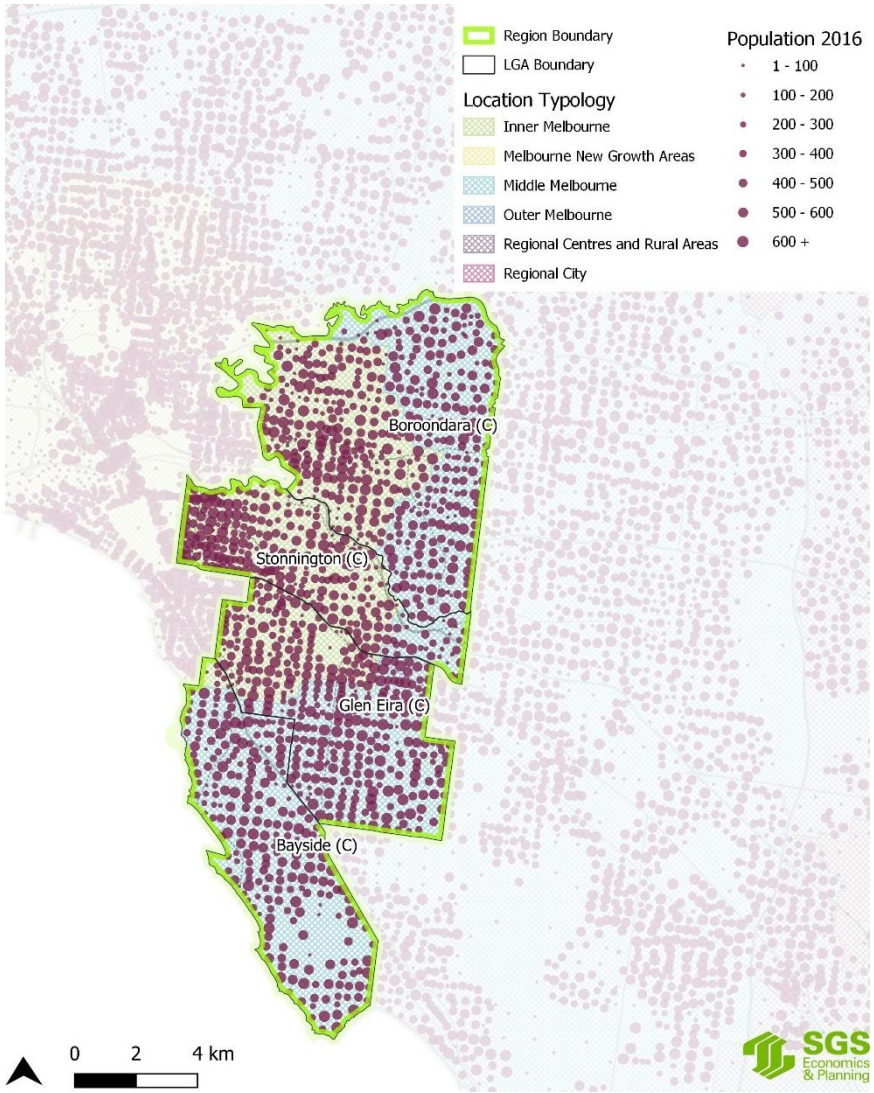
Figure 57 and Figure 58 , overleaf, show existing and projected population density.

TABLE 9: POPULATION (2011 -2016)

	2011	2016	2011-16		
			AAGR	Change	% Region
LGAs					
Bayside	96,119	102,737	1.3%	6,618	15.9%
Boroondara	167,113	177,414	1.2%	10,301	24.8%
Glen Eira	137,153	149,013	1.7%	11,860	28.6%
Stonnington	98,853	111,606	2.5%	12,753	30.7%
Inner South East Metro Region	499,238	540,770	1.7%	41,532	8.3%
Location Typology					
Inner Melbourne	224,991	249,016	2.0%	24,024	57.8%
Middle Melbourne	274,165	291,671	1.2%	17,505	42.2%
Inner South East Metro Region	499,157	540,687	1.6%	41,530	8.3%
Metro Melbourne	4,108,837	4,653,078	2.5%	544,241	
Victoria	5,537,817	6,179,249	2.3%	641,432	

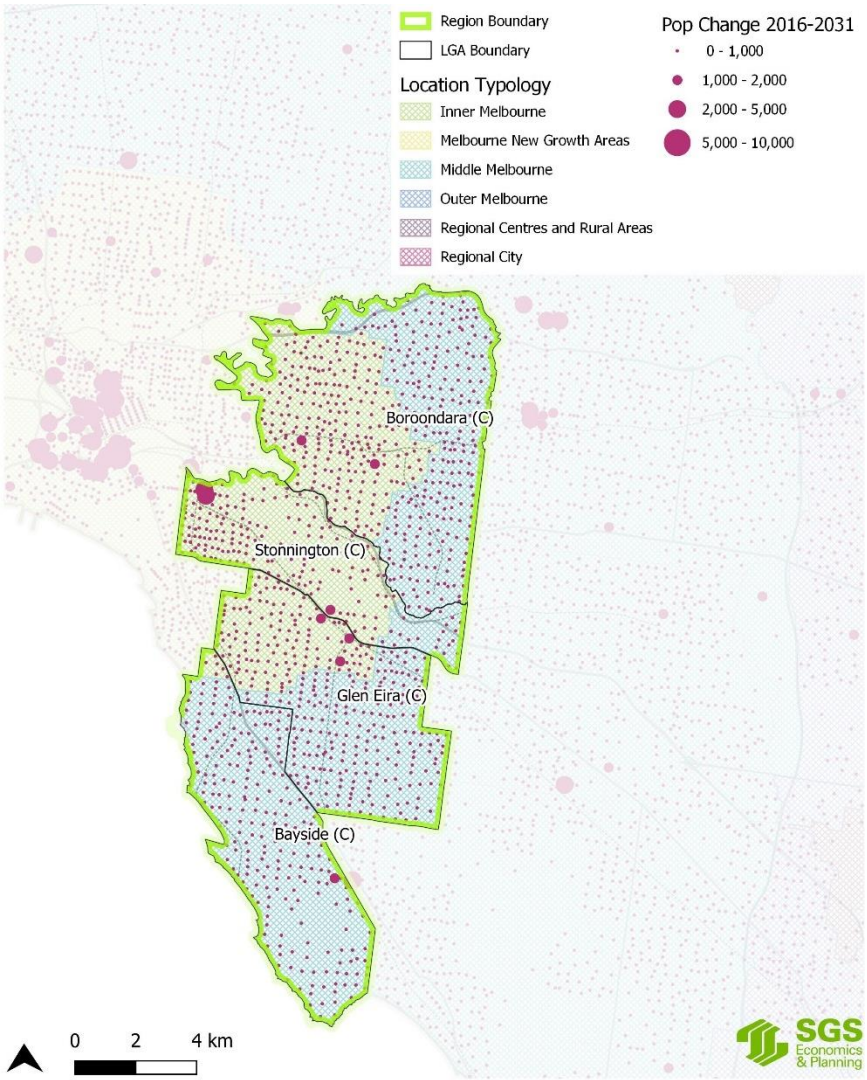
Source: SGS Economics and Planning, 2018 Note: The difference between the region totals of location typology and LGAs reflect different data grouping techniques to group small area data into target geographies.

FIGURE 57: POPULATION DENSITY (2016)



Source: SGS Economics and Planning, based on Victoria in Future 2016 and SALUP17, TfV

FIGURE 58: PROJECTED POPULATION CHANGE (2011-2031)



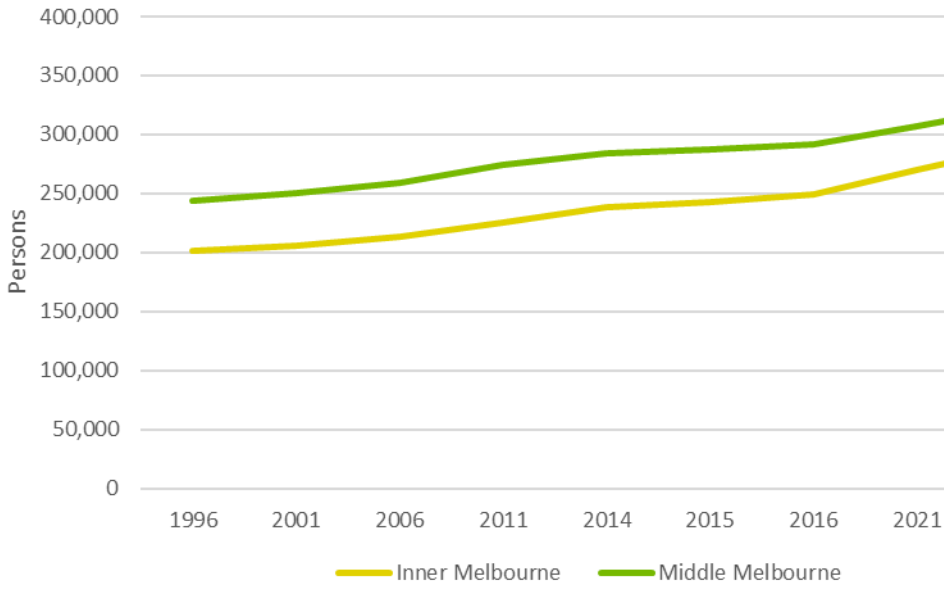
Source: SGS Economics and Planning, based on Victoria in Future 2016 and SALUP17, TfV

Forecast population growth

Figure 59 presents recent and forecast population growth by location typology.

- Population forecasts to 2031 show a steady increase in residents in the both Inner and Middle Melbourne.

FIGURE 59: FORECAST POPULATION CHANGE (1996-2031)



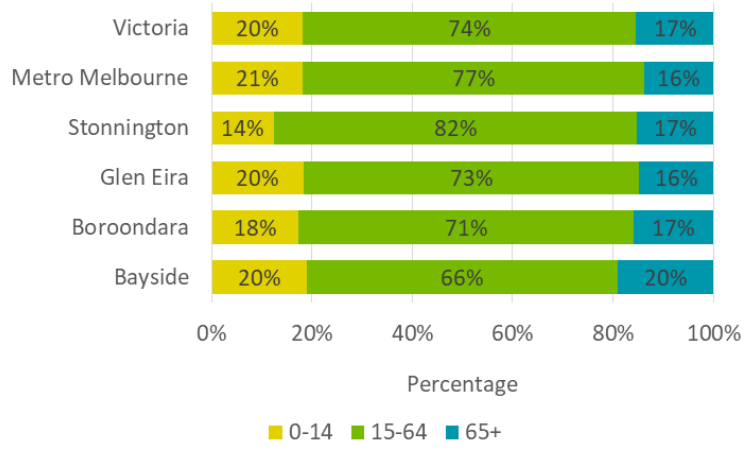
Source: SGS Economics and Planning, based on Victoria in Future 2018 and ABS (cat. 3218.0)

Population by age groups over time

Figure 60 shows:

- The City of Stonnington has a higher working age population than other LGAs, metropolitan Melbourne and Victoria, with almost 82 per cent of the population of working age. The City of Stonnington also had the lowest proportion of children aged 0-14.
- Two-thirds of City of Bayside residents are of working age, the lowest proportion, and 20 per cent were 65+ in 2016, the highest proportion.

FIGURE 60: PROPORTION OF POPULATION BY AGE GROUP (2016)

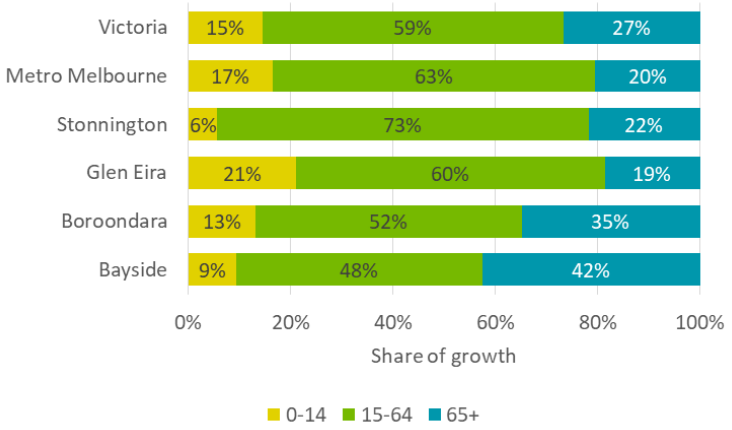


Source: ABS Census 2011 and 2016

The change in population by age group between 2011 and 2016 is shown in Figure 61.

- Population in each age group increased between 2011 and 2016.
- High growth in the proportion of older people is representative of broader, national demographic trends. However, for the Bayside and Boroondara LGAs, the growing proportion of older people is higher than the metropolitan and State average
- The City of Stonnington experienced high growth in the proportion of the working age population as well as people aged 65+.
- The City of Glen Eira experienced higher growth in children aged 0-14 than the rest of the region, metropolitan Melbourne and Victoria.

FIGURE 61: SHARE OF POPULATION CHANGE BY AGE (2011-2016)



Source: ABS Census 2011 and 2016

The change in population by age groups over between 2006 and 2016 is shown in Figure 10.

- The City of Bayside experienced the highest average annual growth rate in older residents aged 65+.
- The City of Glen Eira's growth in young residents 0-14 years was higher than other LGAs, suggesting attracts families with younger children.
- With dense inner areas more likely to meet the needs of pre and post-family age groups, the City of Stonnington experienced a higher rate of growth in young adults 15-39 years and those aged 65+. Similarly, the City of Boroondara experienced a higher rate of growth in young adults and people aged 65+.

TABLE 10: AVERAGE ANNUAL POPULATION GROWTH RATES BY AGE GROUPS OVER TIME (2006-2016)

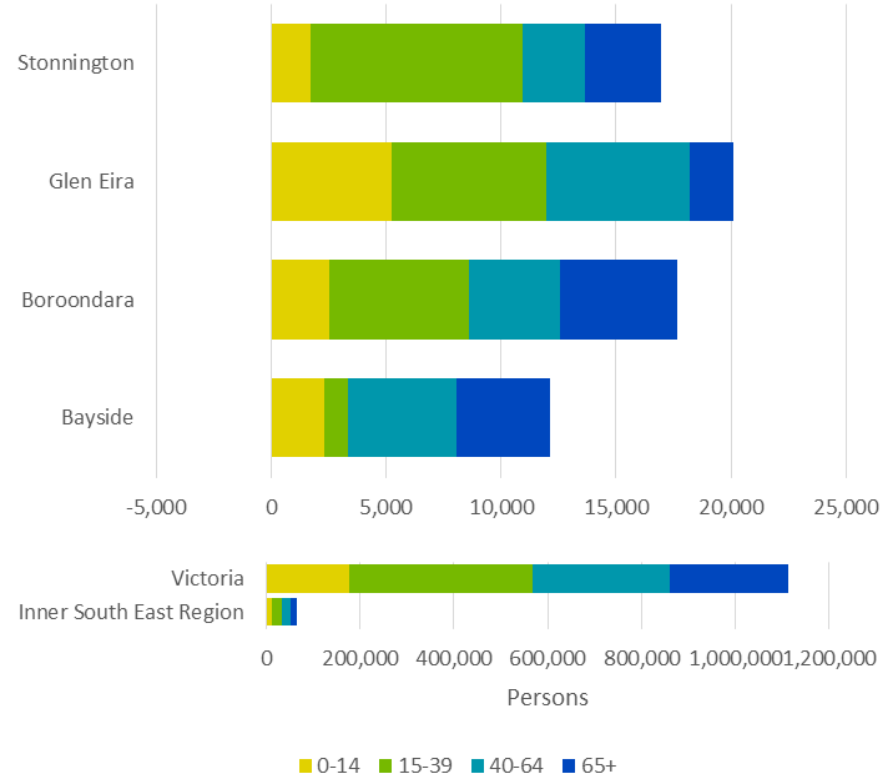
Column heading	2016				AAGR 2006-2016			
LGA	0-14	15-39	40-64	65+	0-14	15-39	40-64	65+
Bayside	19,625	26,916	37,126	19,245	1.3%	0.4%	1.4%	2.4%
Boroondara	30,725	62,562	56,310	27,679	0.9%	1.0%	0.7%	2.1%
Glen Eira	27,326	53,516	45,941	21,800	2.2%	1.3%	1.5%	0.9%
Stonnington	13,910	50,477	30,213	16,403	1.3%	2.0%	0.9%	2.3%
Inner South East Metro Region	91,586	193,471	169,590	85,127	1.3%	1.1%	1.9%	1.4%
Victoria	1,140,064	2,200,757	1,903,876	928,475	2.0%	1.7%	3.2%	1.7%

Source: ABS ERP 2006 and 2016

Figure 62 shows the population growth by age group between 2006 and 2016.

- The City of Bayside had significantly less growth in people aged 15-39 years than the other LGAs.

FIGURE 62: POPULATION GROWTH BY AGE GROUP (2006-2016)



Source: ABS ERP 2006 and 2016

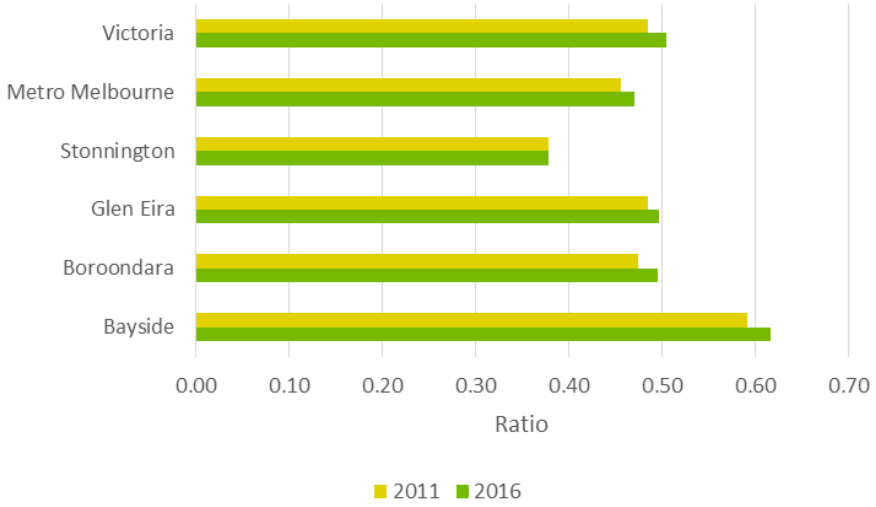
Age dependency ratio

Age dependency is the ratio between the population not in the labour force (typically between age group 0-14 and 65+) and the population in the labour force (age 15-64). A lower dependency ratio means there is less reliance on each working age person.

The dependency ratio helps to understand a location's economic potential as well as its welfare and service needs.

- The age dependency ratio increased in all LGAs except the City of Stonnington where there was no change between 2011 and 2016.
- Age dependency ratios appeared to change in line with metropolitan Melbourne and Victoria between 2011 and 2016 and are increasing as the population ages.
- The higher age dependency ratio of the City of Bayside reflects the local age distribution, with 40 per cent of residents not of working age, as shown in Figure 60.
- The City of Stonnington's unchanged age dependency ratio is likely to be associated with the increase in number of flats in Inner Melbourne, which attracts young adults and sees an associated growth in local labour force, as shown in section 5.3.

FIGURE 63: AGE DEPENDENCY RATIO (2011-2016)



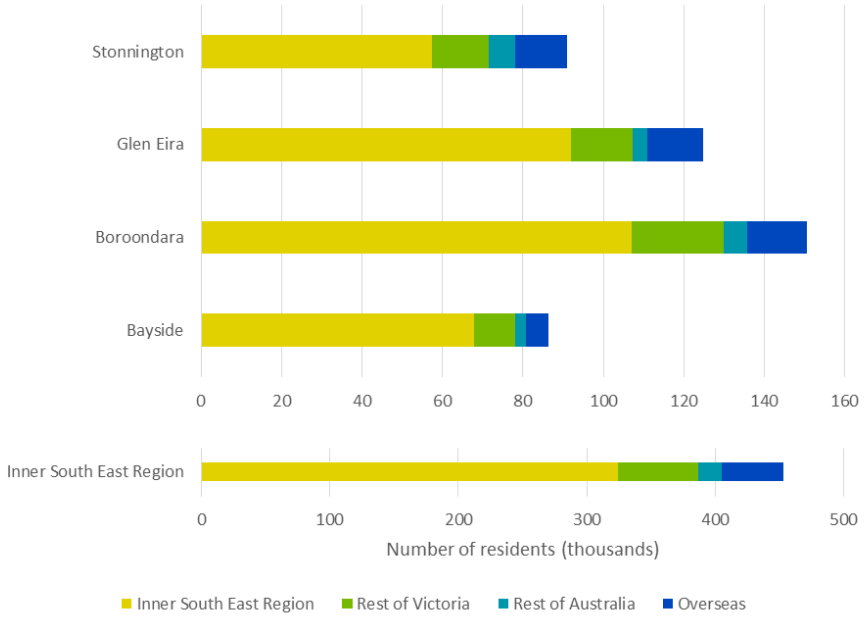
Source: ABS Census 2011 and 2016

Population migration flow

Figure 64 shows the place of origin of residents who moved to the Inner South East Metro Region between 2011 and 2016.

- Most residents in the Inner South East Metro Region are from within the region.
- Similar trends at the LGA level show most people moved from within the Inner South East Metro Region with little movement across different regions of Melbourne.

FIGURE 64: REGION OF ORIGIN FOR CURRENT RESIDENTS BY LGA (2016)



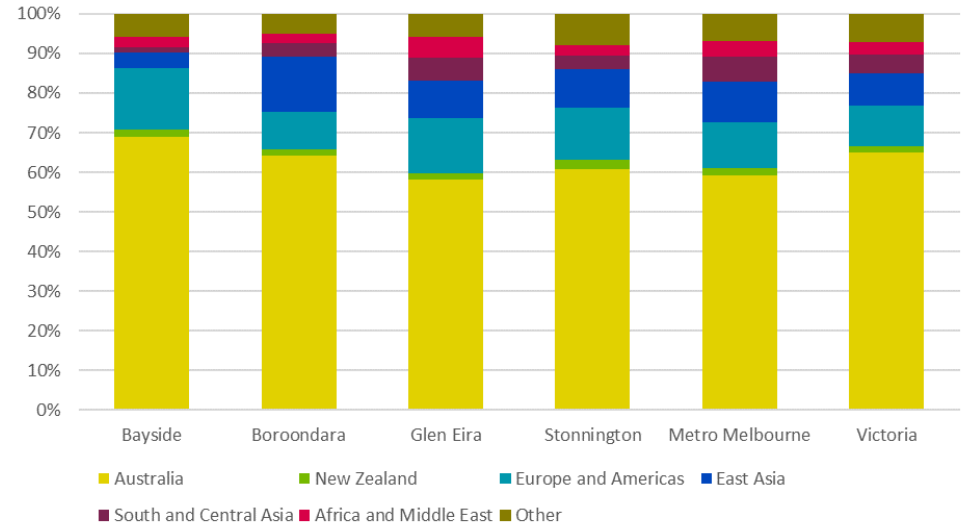
Source: ABS Census 2016

Cultural mix

Cultural mix is measured by the place of birth of the population as presented in Figure 65 and Figure 66 (overleaf).

- The population in the Inner South East Metro Region is predominantly Australian-born. The cultural mix is relatively similar across all LGAs and generally reflects the cultural profile of metropolitan Melbourne and Victoria
- Boroondara, Glen Eira and Stonnington LGAs had similar or slightly higher proportions of East Asian migrants compared to metropolitan Melbourne and Victoria.
- The City of Bayside is the least culturally diverse in the region.
- Migrants from North East Asia are concentrated in pockets in Boroondara and Glen Eira LGAs, with South East Asia concentrated in the same areas at lower numbers.

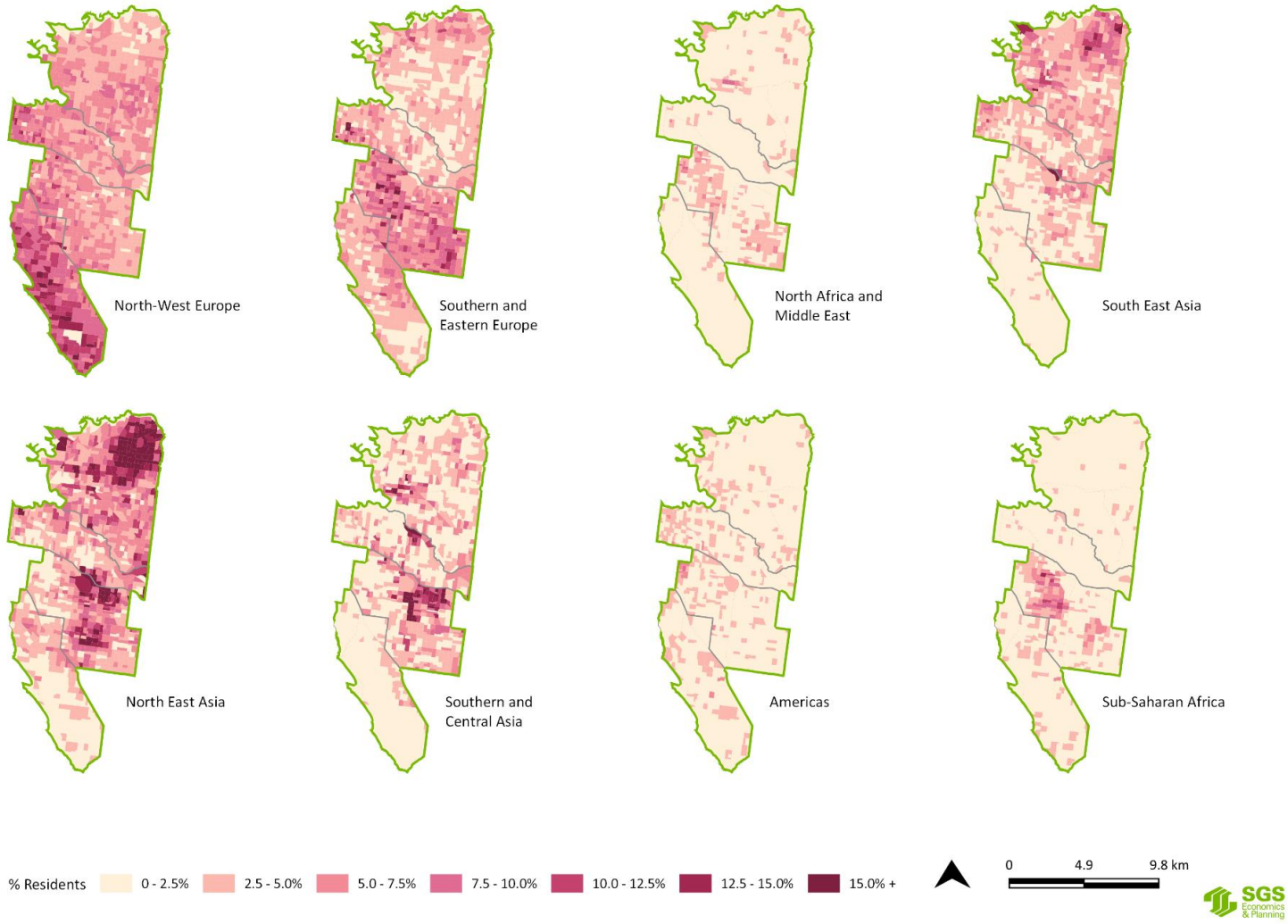
FIGURE 65: PLACE OF BIRTH AS A PERCENTAGE OF TOTAL POPULATION, 2016



Source: ABS Census 2016

- Migrants from Europe and the Americas were evenly represented in all LGAs, although higher in the City of Bayside, and reflect those of metropolitan Melbourne and Victoria.
- The City of Bayside's slightly higher proportion of migrants from North West Europe is more evenly spread across the LGA.
- Residents originating from Southern and Eastern Europe are most concentrated in the City of Glen Eira and small pockets of the City of Stonnington.
- The City of Glen Eira is more culturally diverse than other LGAs and has pockets with high densities of residents born in Southern and Central Asia and Sub-Saharan Africa.

FIGURE 66 PLACE OF BIRTH (2016)



Source: ABS 2016 Census

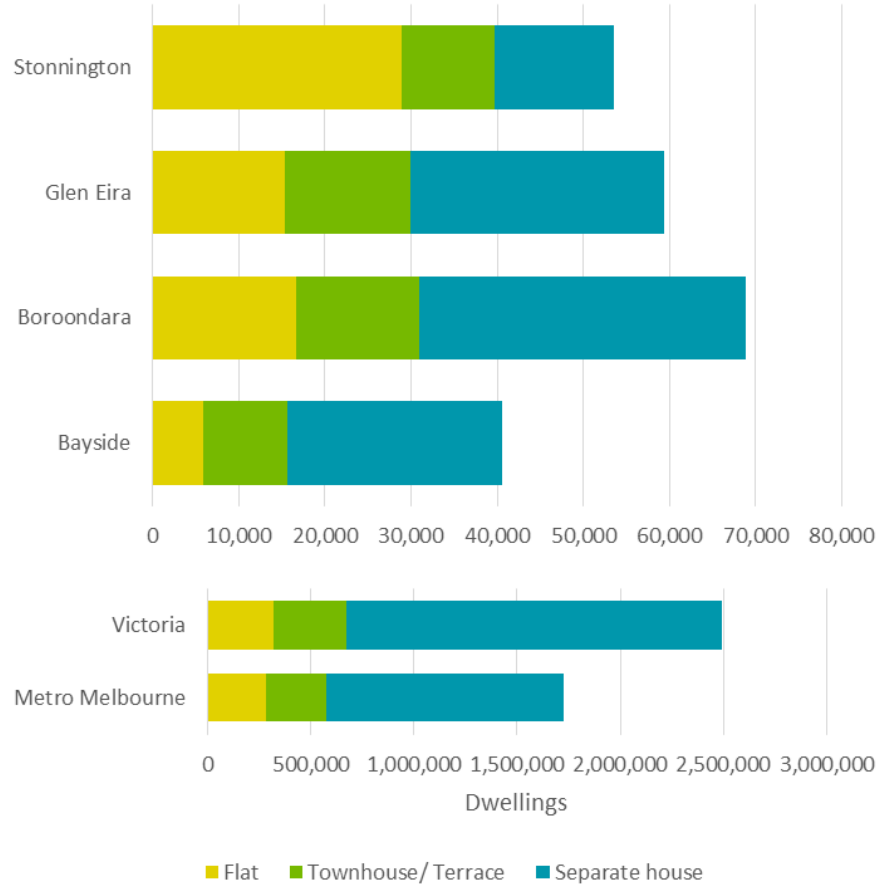
5.3 Housing diversity

Dwelling typology and activity

A greater diversity of housing in a location provides greater choice to households. It is influenced by changes in the property market, land available for residential development, and housing policy and regulations. Figure 67 shows:

- The Inner South East Metro Region has a more diverse housing typology than metropolitan Melbourne and Victoria.
- Separate house is the dominant dwelling type in every LGA except the City of Stonnington, although the proportion of separate houses is lower than metropolitan Melbourne and Victoria.
- In the City of Stonnington, flats account for over half of all dwellings.

FIGURE 67: DWELLING TYPE BY LGA (2016)



Source: ABS Census 2016

Site density is one measure of housing diversity. It is derived from DELWP's Housing Development Data and is different to a gross or net density measure. It is based on the land (or lot) associated with each newly constructed dwelling only and does not include surrounding open space, roads, footpaths or other land required to support that residential use. While site density can provide some indication of the types of dwellings in an area, different dwelling types have overlapping site density ranges – for example a detached house on a small lot could have a higher site density than a development of large townhouses.

Site density is grouped in three broad ranges:

- **High site density** - greater than 60 dwellings per hectare (DPH)
- **Medium site density** - between 30 and 60 DPH
- **Low site density** - less than 30 DPH

Figure 68 shows the net change in site density between 2005 and 2015. A negative number indicates there were fewer dwellings at a certain site density range in 2015 compared to 2005, possibly because a dwelling has been demolished or a site was subdivided or redeveloped to a higher density. For example, if one lower density dwelling is replaced by four higher density townhouses this would be measured as a reduction in lower site density and an increase in higher site density.

In the Inner South East Metro Region:

- Density increased between 2005 and 2015.
- Densities greater than 60 DPH increased in all LGAs with the greatest increase in the City of Stonnington.
- The share of high density dwellings was greater in all LGAs than metropolitan Melbourne and Victorian averages.
- Glen Eira, Boroondara and Bayside LGAs also had increases in medium density dwellings.
- All LGAs saw a reduction in lower density dwellings with the greatest reduction in the City of Glen Eira.

FIGURE 68: CHANGE IN DWELLINGS BY SITE DENSITY (2005-2015)

Source: DELWP Housing Development Data 2006 and 2016

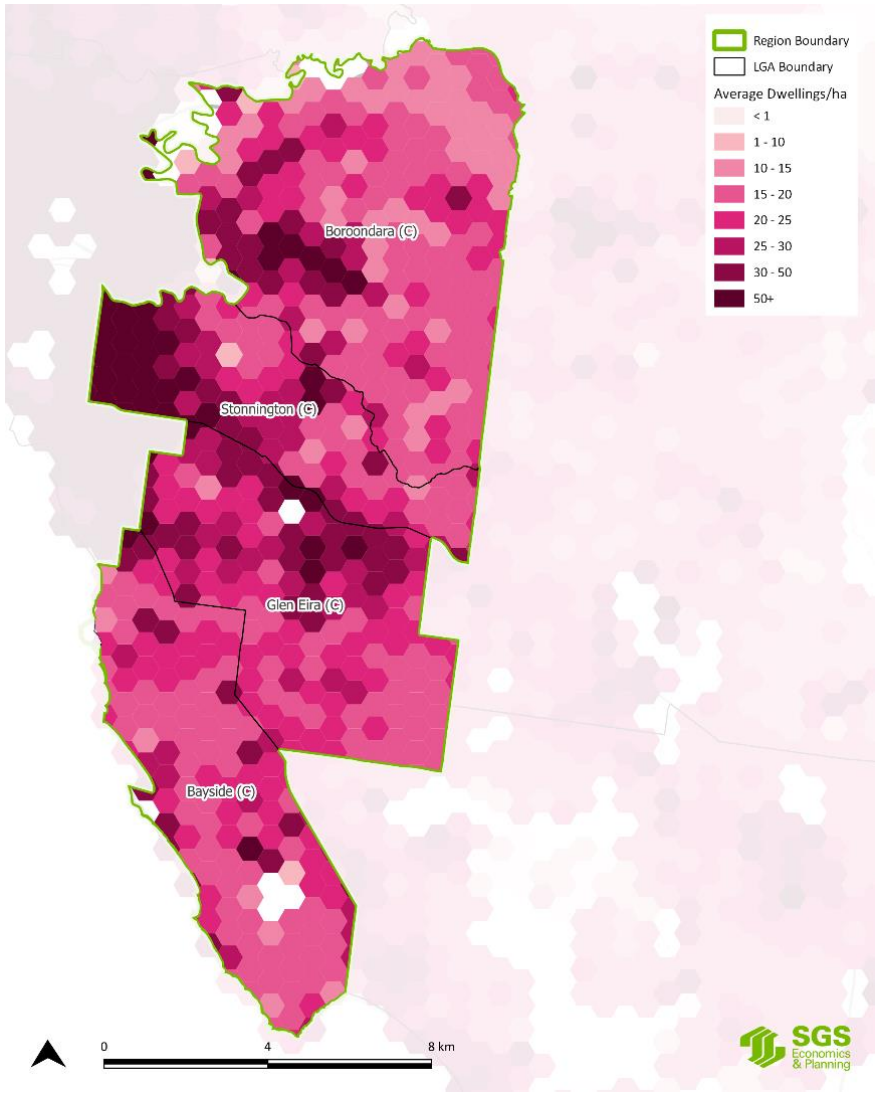
Figure 69 shows average dwellings per hectare.

- Inner areas of the City of Stonnington have a density of more than 50 DPH. Other concentrations include the City of Boroondara, particularly near Swinburne University; in the City of Glen Eira around Monash University; and in the City of Bayside around Bay Street. These areas are generally surrounded by density of 30-50 DPH.
- Parts of the Inner South East Metro Region with fairly low density are found in Boroondara and Bayside LGAs.

New development density is illustrated in Figure 70.

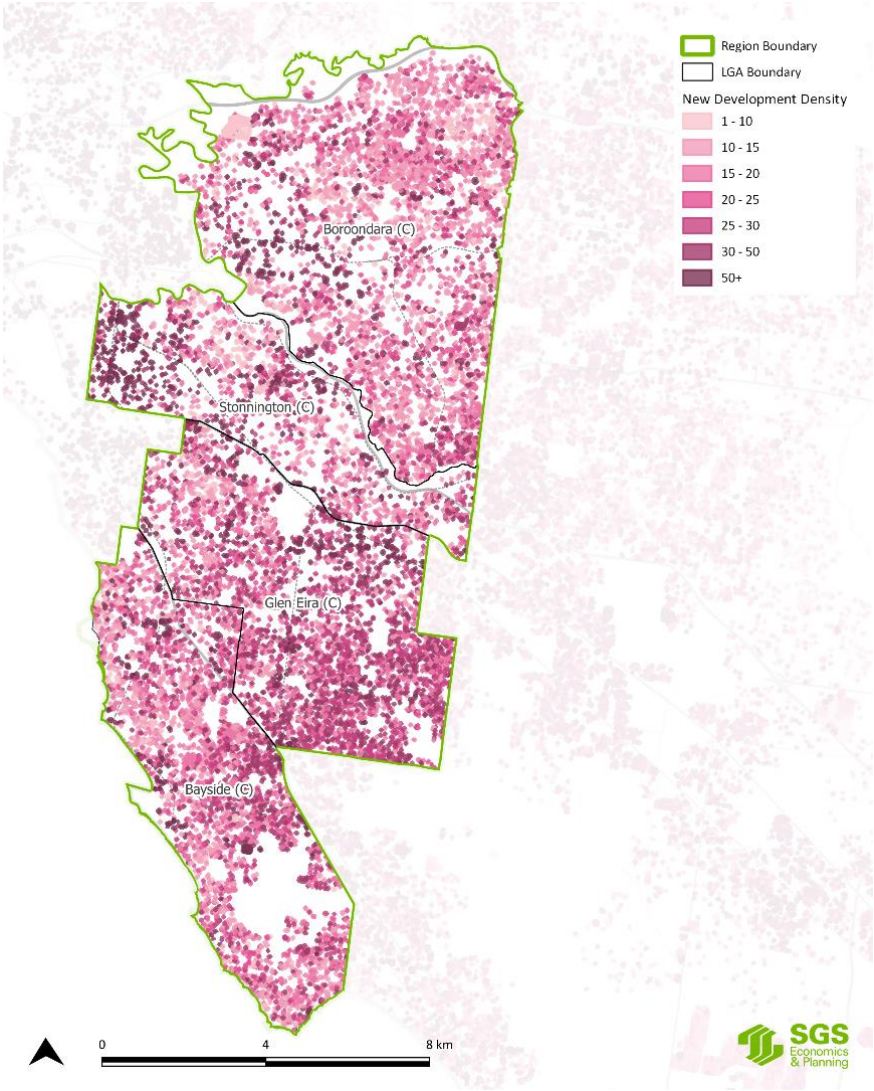
- The south-east corner of the City of Glen Eira and the central-west of the City of Boroondara appear to be becoming denser. Densification is limited in the City of Bayside, although there is some higher density development around Bay Street.
- New dwellings in the City of Stonnington were consistently high density from 2005 to 2015.

FIGURE 69: AVERAGE DWELLINGS PER HECTARE (2016)



Source: DELWP Housing Development Data 2016

FIGURE 70: DEVELOPMENT DENSITY OF NEW PROJECTS (2005–2016)

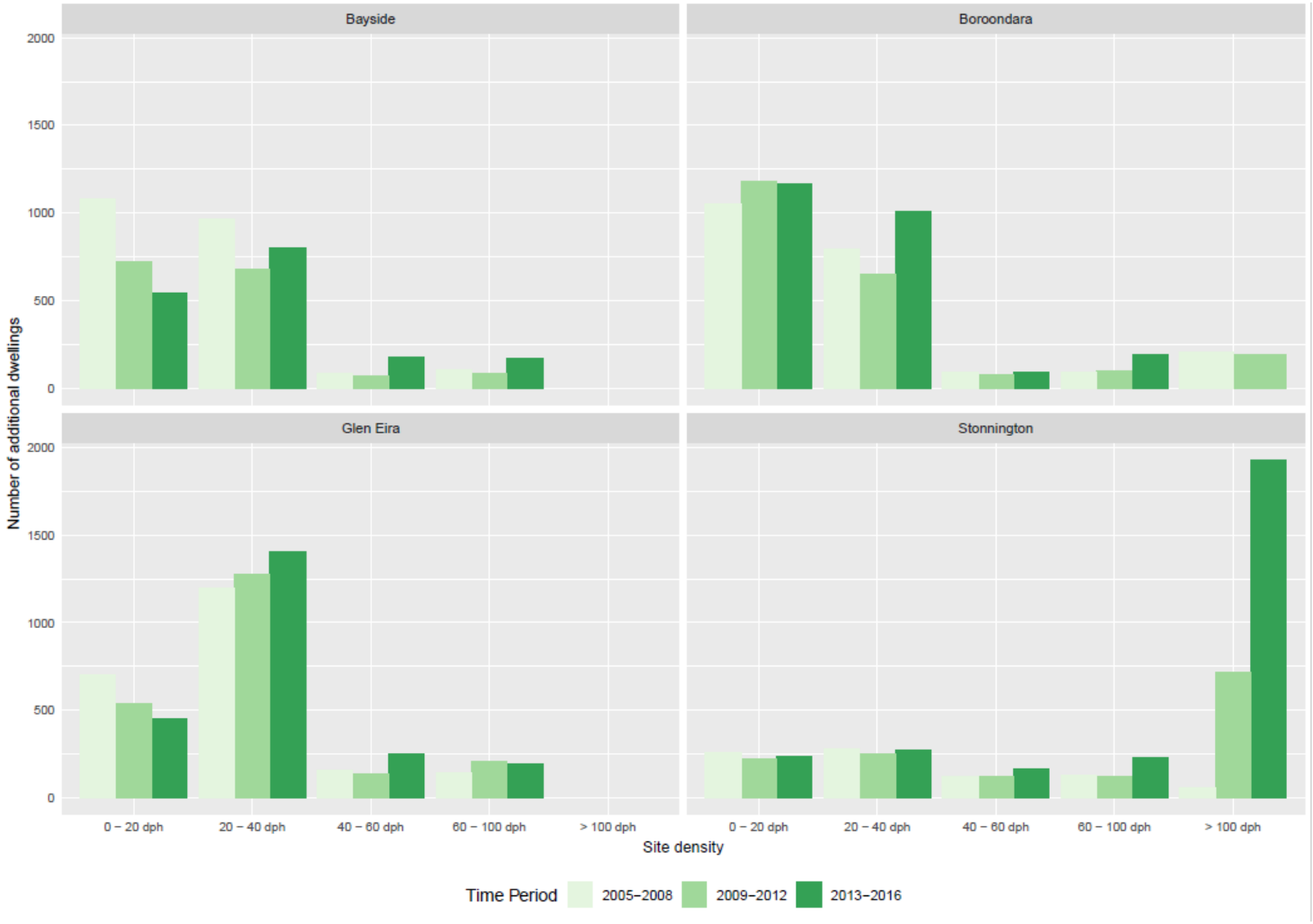


Source: DELWP Housing Development Data 2006 and 2016

Figure 71 (overleaf) shows the site densities for new dwellings in each LGA between 2005 and 2008; 2009 and 2012; and 2013 and 2016.

- The City of Stonnington had highest site densities of new dwellings with the largest share of recent development, 2013-2016, at site densities greater than 100 DPH.
- The City of Boroondara had high density development at site densities greater than 100 between 2005 -2008 and 2009-2012.
- The City of Boroondara had the most development occur at lower site densities, 0-20 DPH.
- The City of Glen Eira saw steady growth in development at 20-40 DPH from 2005 through to 2016.

FIGURE 71: DENSITY PROFILE OF NEW DWELLINGS (2005-2016)



Source: DELWP Housing Development Data 2006 and 2016

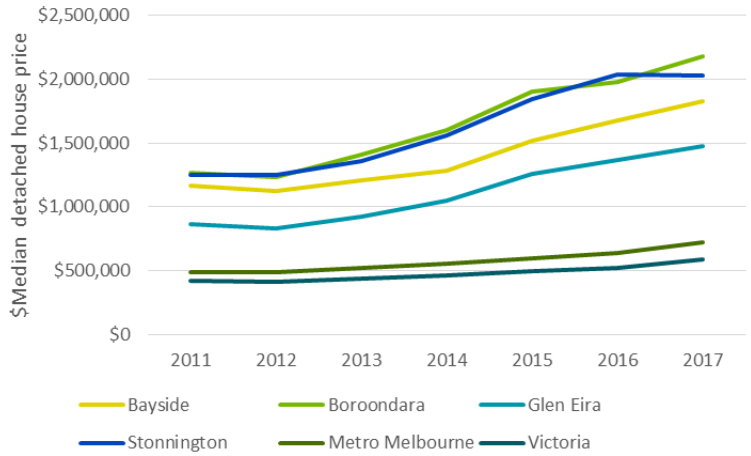
5.4 Housing prices and stress

Housing price

Figure 72 and Figure 73 present recent house price trends.

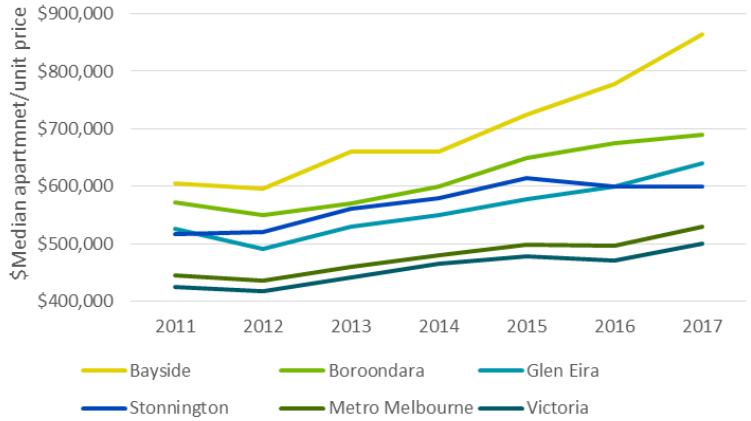
- The median prices for detached houses in the Inner South East Metro Region show an upward trend between 2011 and 2017, although prices stabilised in the City of Stonnington since 2016.
- The median prices for apartments and units have also experienced overall upward growth from 2011 to 2017, with the median prices decreasing in the City of Stonnington since 2015.
- The plateau in detached house and median apartment/unit price in recent years in the City of Stonnington may be associated with the high levels of development and densification.
- The median apartment/unit price may also be levelling out in the City of Boroondara.
- In the City of Bayside the median unit price is significantly higher than the other LGAs in the region.
- Median house and apartment unit prices in all LGAs were higher than metropolitan Melbourne and Victorian median prices.

FIGURE 72: MEDIAN DETACHED HOUSE PRICE (2011-2017)



Source: DELWP, 2017

FIGURE 73: MEDIAN APARTMENT/UNIT PRICE (2011-2017)



Source: DELWP, 2017

Housing stress

Housing stress measures the balance between household income and housing expenditure. It can present as either rental stress or mortgage stress.

Households in rental stress are those which:

- are low income, defined as falling within the bottom 40th percentile of the household income distribution of Victoria
- spend at least 30 per cent of their household income on rent.

Households in mortgage stress are those which:

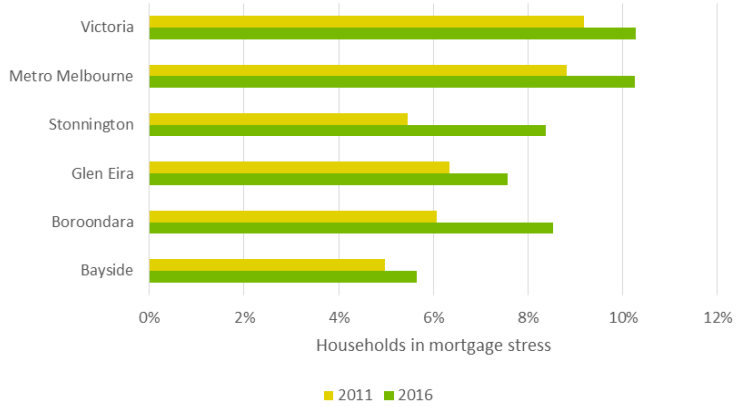
- are low income, defined as falling within the bottom 40th percentile of the household income distribution of Victoria
- spend at least 30 per cent of their household income on mortgage payments.

Figure 74 and Figure 75 present mortgage and housing stress by LGA.

- All LGAs experienced lower rates of mortgage and rental stress than metropolitan Melbourne and Victoria.
- Mortgage stress increased significantly in the City of Stonnington and the City of Boroondara between 2011 and 2016, and to a lesser extent in the City of Glen Eira and the City of Bayside.
- All LGAs experienced an increase in households in rental stress between 2011 and 2016.
- The City of Glen Eira has the greatest proportion of households in rental stress in 2011 and 2016, with more than 25 per cent of households in rental stress.
- Stonnington and Boroondara LGAs had similar levels of households in rental stress and slightly more than Bayside LGA, which had the lowest proportion of households in rental stress. All these areas had more than 20 per cent of households in rental stress.

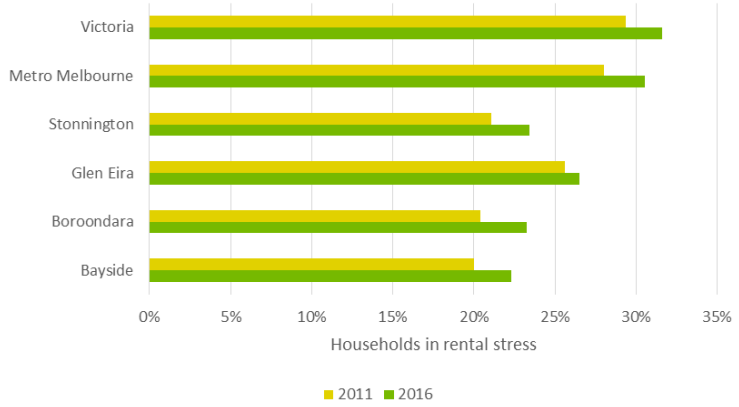
The proportion of households in rental stress is higher than mortgage stress not only in the Inner South East Metro Region but also metropolitan Melbourne and Victoria.

FIGURE 74: LOW INCOME HOUSEHOLDS IN MORTGAGE STRESS (PERCENTAGE OF TOTAL HOUSEHOLDS WITH MORTGAGE)



Source: ABS Census 2011 and 2016

FIGURE 75: LOW INCOME HOUSEHOLDS IN RENTAL STRESS (PERCENTAGE OF TOTAL HOUSEHOLDS RENTING)

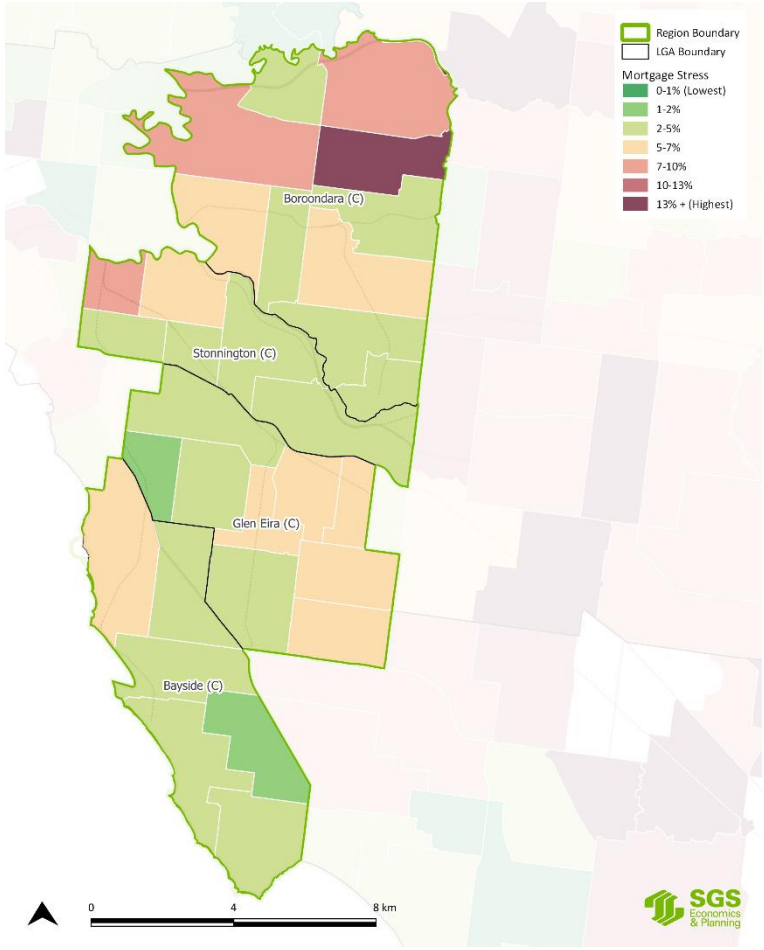


Source: ABS Census 2011 and 2016

Figure 76 and Figure 77 illustrate the distribution of households with mortgage stress and rental stress in the Inner South East Metro Region.

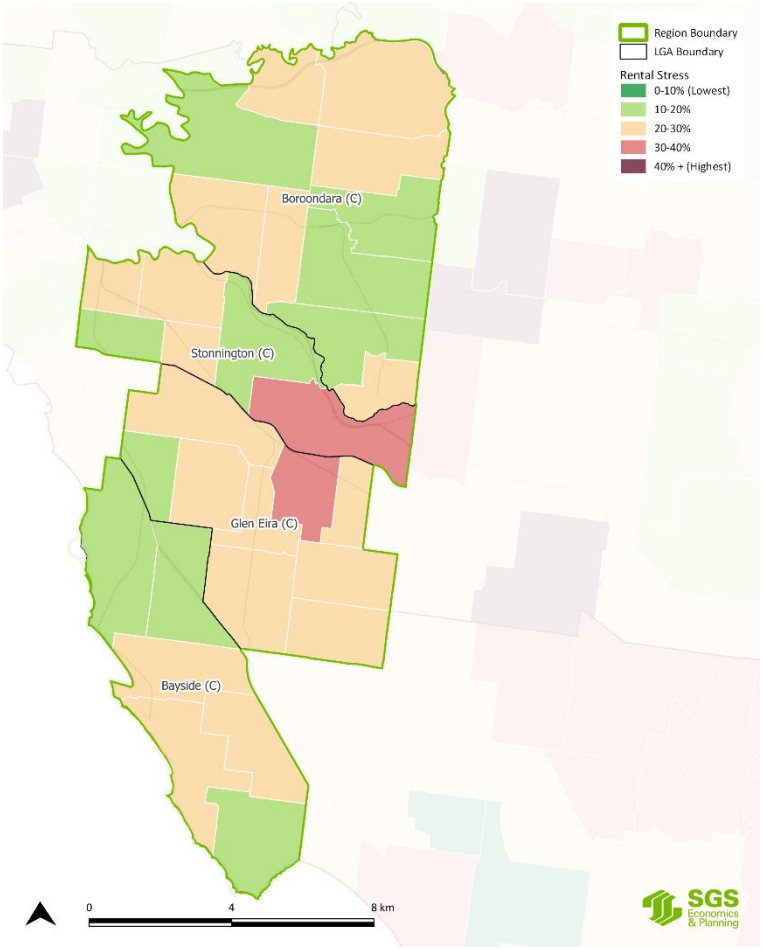
- The area with highest proportions of mortgage stress is around Balwyn in the City of Boroondara.
- Additional areas of higher proportions of mortgage stress are in the City of Boroondara, likely to be separate dwellings, and inner areas of the City of Stonnington, which has a greater mix of dwelling types.
- Rental stress varies areas where 30 to 40 per cent of households are in rental stress are in the outer areas of Stonnington and Glen Eira LGAs.

FIGURE 76: HOUSEHOLDS IN MORTGAGE STRESS 2016 (PERCENTAGE OF TOTAL HOUSEHOLDS WITH MORTGAGE)



Source: ABS Census 2016

FIGURE 77: HOUSEHOLDS IN RENTAL STRESS 2016 (PERCENTAGE OF TOTAL HOUSEHOLDS RENTING)

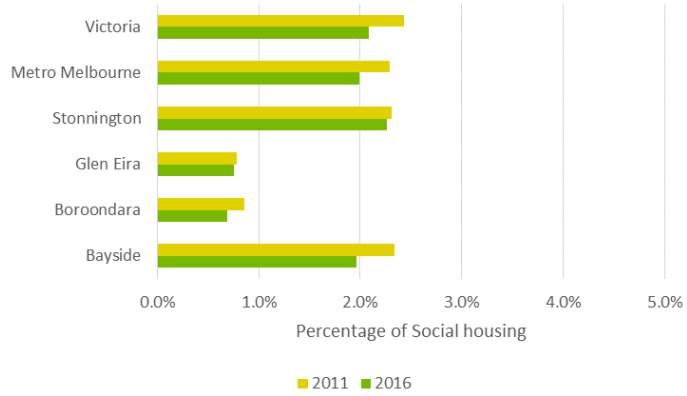


Source: ABS Census 2016

Figure 78 and Figure 79 present recent trends in social housing (as a proportion of total dwellings) and homelessness (as a proportion of the total population).[4]

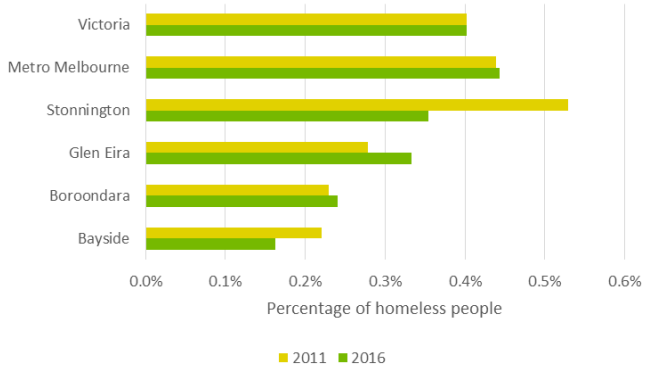
- The City of Stonnington had the highest proportion of social housing in 2016, slightly above metropolitan Melbourne and Victoria.
- The proportions of social housing decreased between 2011 and 2016 across all LGAs, particularly in the City of Bayside.
- All LGAs had lower rates of homelessness in 2016 than metropolitan Melbourne and Victoria.
- The City of Stonnington saw a reduction in the proportion of homeless people between 2011 and 2016
- The City of Glen Eira and to a lesser extent the City of Boroondara experienced an increase in the proportion homeless people over the same period.

FIGURE 78: SOCIAL HOUSING (PERCENTAGE OF TOTAL DWELLINGS) (2011 AND 2016)



Source: ABS Census 2011 and 2016

FIGURE 79: HOMELESS PEOPLE (PERCENTAGE OF TOTAL POPULATION) (2011 AND 2016)



Source: ABS Census 2011 and 2016

[4] Homelessness is defined as living in an inadequate dwelling, having no tenure, when initial tenure is short and not extendable, or tenure does not allow people to have control of, and access to, space for social relations. ABS 2012

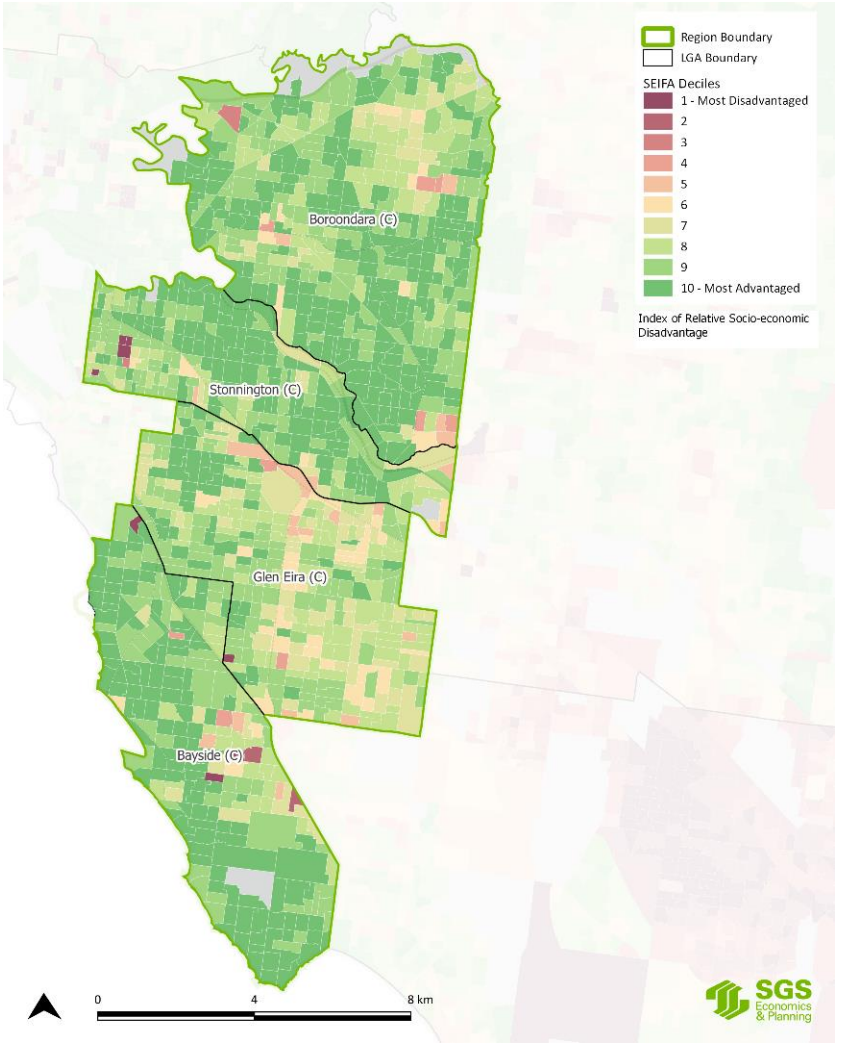
5.5 Disadvantage

SEIFA - Index of Relative Socio-Economic Disadvantage

Figure 80 shows the SEIFA Index of Relative Socio-Economic Disadvantage across the Inner South East Metro Region. It illustrates the rate of advantage and disadvantage relative to the national mean, and takes into consideration measures such as occupation, education, housing, health status, English language proficiency, marital status, health and disability status, household composition, internet access and household income.

- The majority of the Inner South East Metro Region falls within the advantaged to most advantaged range, with small areas of extreme disadvantage in parts in all LGAs.
- Areas of disadvantage may reflect social housing locations, as is the case with the social housing towers in Prahran in the City of Stonnington.
- More broadly, the less advantaged areas are generally in middle to outer areas of Glen Eira and Stonnington LGAs, the City of Bayside around Bay Street and small areas of the City of Boroondara.

FIGURE 80: SEIFA INDEX OF RELATIVE DISADVANTAGE (2016)



Source: ABS Census 2016

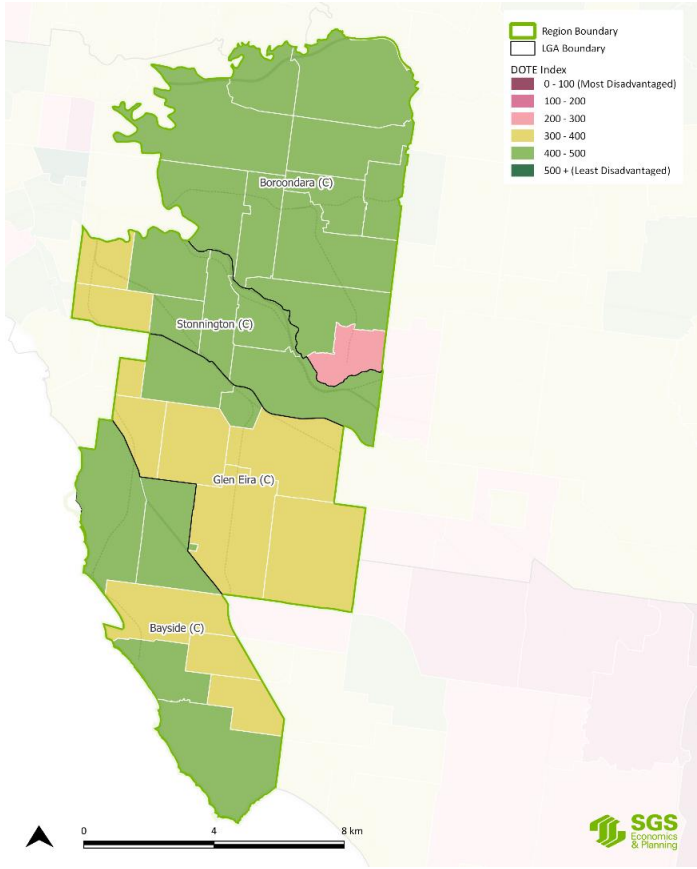
DOTE Index

Jesuit Social Services and Catholic Social Services Australia have developed the Dropping Off the Edge (DOTE) Index to measure disadvantage levels.

The indicators utilised in the DOTE Index overlap with some (income, educational attainment, job type and employment status) used in SEIFA. The DOTE Index differs in its utilisation of indicators that measure specific aspects of disadvantage rather than variables that reflect disadvantage. In addition to several SEIFA variables, the DOTE Index also includes indicators relating to child maltreatment, prison admissions, criminal court convictions, domestic/family violence and psychiatric hospital admissions.[5]

- The Inner South East Metro Region generally ranks well in terms of advantage.
- Boroondara and Stonnington LGAs are broadly the least disadvantaged, as are parts of the City of Bayside and a small area of the City of Glen Eira.
- Most localities within of the City of Glen Eira are moderately advantaged (Bentleigh, Bentleigh, Caulfield South and Murrumbeena), with northern parts of the LGA advantaged (Caulfield and Caulfield North).
- A small area of disadvantage in south west the City of Boroondara around Ashburton is likely to align with aged care and/or social housing uses in this area.

FIGURE 81: AVERAGE RANK, DOTE INDEX (2015)



Source: Jesuit Social Services and Catholic Social Services Australia 2015 (note that 2015 data is latest available)

[5] Catholic Social Services Australia (2015), Dropping Off the Edge: Persistent Communal Disadvantage in Australia, pp.10. Accessed 6 September 2018 from: http://k46cs13u1432b9asz49wnhcx-wpengine.netdna-ssl.com/wp-content/uploads/0001_dote_2015.pdf

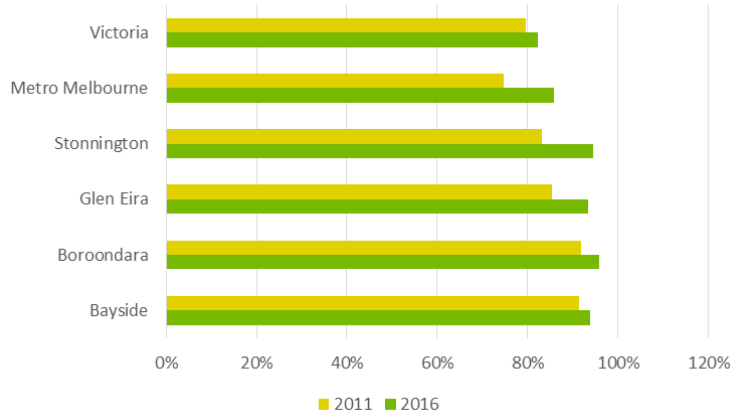
5.6 Youth engagement with work or study

Education levels

Education levels correlate to skill level, especially for people in the younger working age groups. The On Track survey by Department of Education shows the study or work plans of high school completers six months after they finish high school.

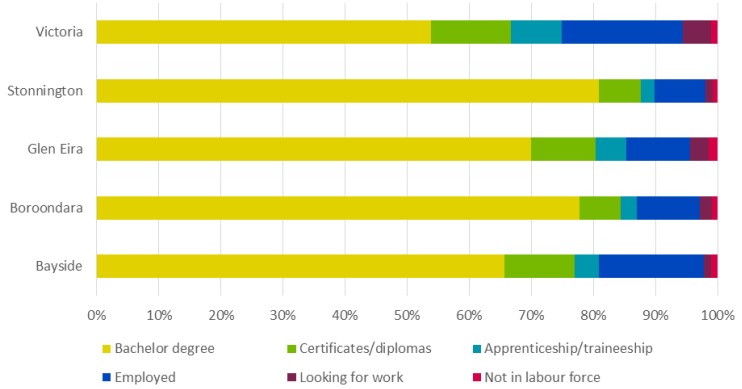
- All LGAs have higher proportions of people aged 20-24 with Year 12 or higher qualification compared to metropolitan Melbourne.
- More than 90 per cent of residents aged 20-24 have a Year 12 or higher qualification in each LGA.
- The percentage of people with a Year 12 or higher qualification increased across all LGAs between 2011 and 2016. The City of Stonnington saw the greatest increase over this period and has the highest proportion in the Inner South East Metro Region. The City of Stonnington also has the highest proportion of young adults in the region.
- Most of those who completed Year 12 in the Inner South East Metro Region went on to tertiary education. Rates are higher than the Victorian average.
- The City of Stonnington has the highest proportion of students attending university after high school, followed by the City of Boroondara. Glen Eira and Bayside LGAs had higher rates of people undertaking certificate/diplomas.
- A smaller proportion of people undertook apprenticeship or traineeships, with the proportion below the Victorian average.
- Those completing Year 12 in the Inner South East Metro Region are on track to be highly educated and highly skilled residents.

FIGURE 82: PERCENTAGE OF PEOPLE AGED 20 TO 24 WITH YEAR 12 OR HIGHER QUALIFICATION (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 83: DESTINATIONS OF 2017 YEAR 12 OR EQUIVALENT COMPLETERS (2017)



Source: On Track, Department of Education, 2017

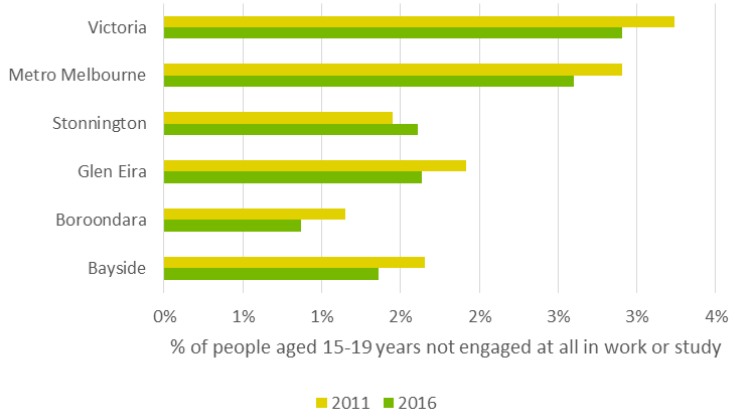
Engagement with work or study

The rate of youth engagement in work or study can signify an area's level of education resources and the level of skills generally required to be employed in local job markets.

Youth disengagement with work or study can stem from taking time off from studies, travel, illness and disability, or family commitment. The youth disengagement rate can also inform investments in education and professional training services.

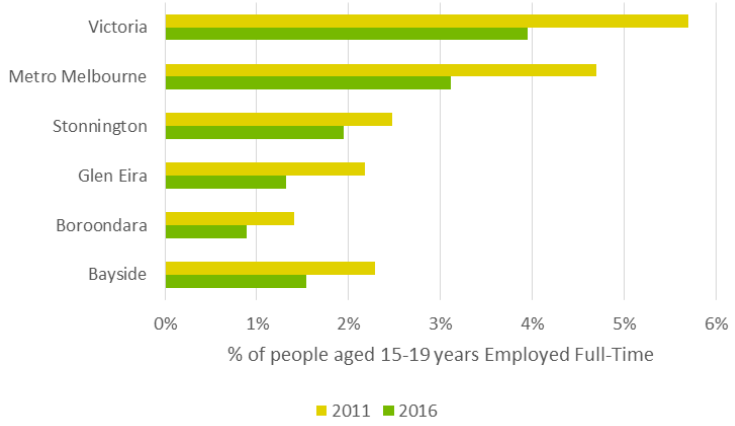
- All LGAs in the Inner South East Metro Region have lower rates of youth disengagement than the metropolitan Melbourne and Victorian average, with only one to two per cent of people aged 15-19 not engaged in work or study.
- The City of Stonnington was the only LGA to experience a slight increase in youth disengagement between 2011 and 2016.
- Youth participation in full-time work also decreased in each LGA between 2011 and 2016. This correlates with the high proportion of people who go on to tertiary education after completing Year 12.

FIGURE 84: YOUTH DISENGAGEMENT (2011-2016)



Source: ABS Census 2011 and 2016

FIGURE 85: YOUTH LABOUR PARTICIPATION (2011-2016)



Source: ABS Census 2011 and 2016

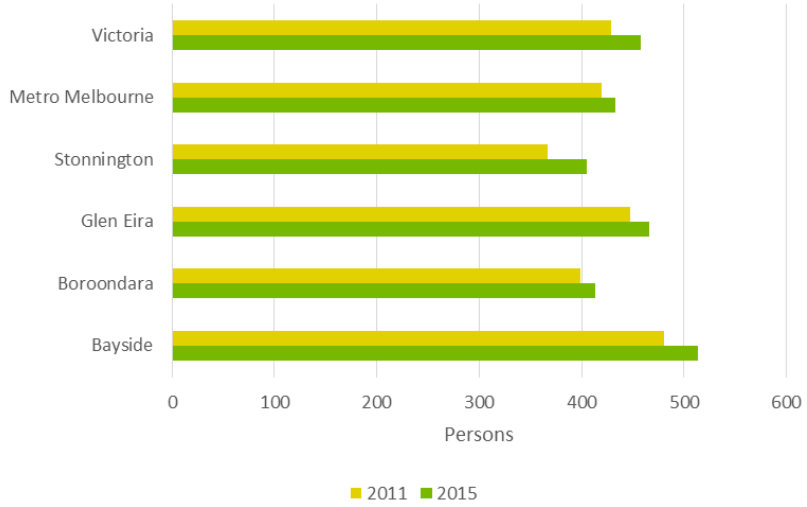
5.7 Population health

Hospital inpatient separations

Inpatient separations are a measure of the number of instances a patient leaves a hospital because of death, discharge, sign-out against medical advice or transfer. It is a common measure of the utilisation rate of hospital services.

- The number of inpatient separations varies, with higher rates in the City of Bayside and the City of Glen Eira, both of which were higher than the Victorian and metropolitan rates in 2011 and 2016.
- The higher rates in City of Bayside may reflect the higher proportions of people aged 65+ in that LGA.

FIGURE 86: INPATIENT SEPARATIONS PER 1000 POPULATION (2011-2015)



Source: DHHS Local Government Area Statistical Profiles, 2011 and 2015 (note that 2015 data is latest available)

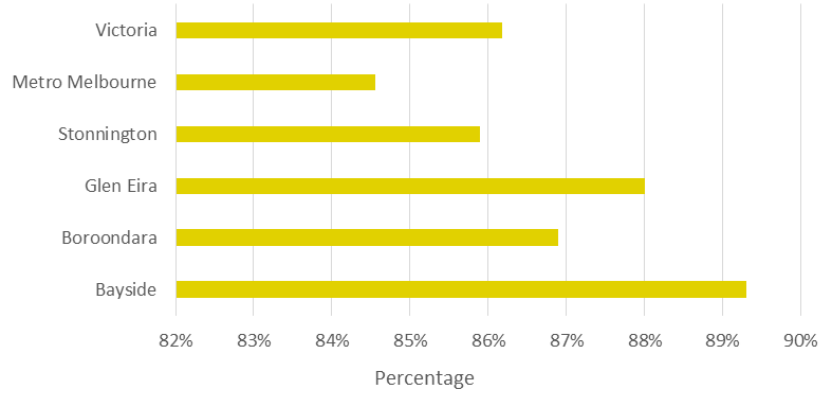
Access to community and health care services

Community health services are provided to the community alongside general health practitioners and are privately funded services that support primary health services in Victoria.

The scope of community health services can include human services such as drug and alcohol rehabilitation, post-acute care and disability care. The level of access to community and health care services indicates a region's social advantages and disadvantages (Figure 87).

- Residents within the Inner South East Metro Region had higher levels of access to community services and resources than metropolitan Melbourne.
- With the exception of the City of Stonnington, all LGAs had better access than the Victorian average.
- The City of Bayside followed by the City of Glen Eira had slightly higher rates of access to community services and resources than Boroondara and Stonnington LGAs.

FIGURE 87: PERCENTAGE OF PEOPLE WHO COULD DEFINITELY ACCESS COMMUNITY SERVICES AND RESOURCES BY LGA (2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

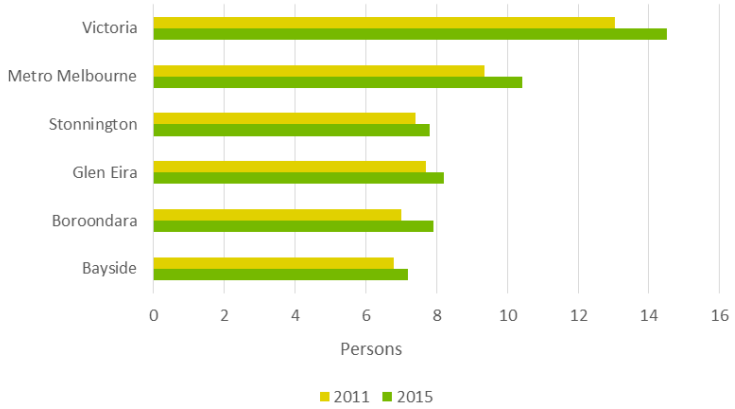
Mental health and drug and alcohol use

Drug and alcohol use and/or poor mental health can lead to adverse health and wellbeing outcomes.

There are limitations to this data. A shortage of services may hide the extent of true demand and the dataset only includes public patients. More affluent areas are likely to have mental health and drug and alcohol patients seeking private care; conversely, the availability of more services may mean higher demand. High utilisation of services might also reflect the availability of a service, a high quality service, and/or a highly accessible service.

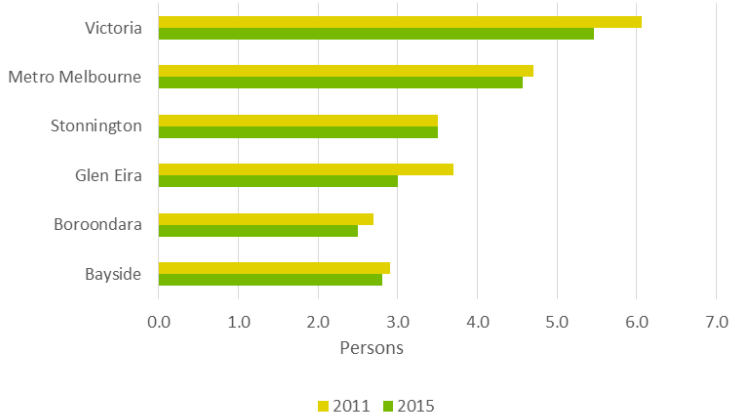
- All LGAs across the Inner South East Metro Region have lower rates of mental health clients than the Victorian and metropolitan Melbourne average. The number of mental health clients per 1,000 people was lowest in the City of Bayside and highest in the City of Glen Eira.
- Rates of drug and alcohol clients in all LGAs were lower than Victorian and metropolitan Melbourne averages. Rates of drug and alcohol clients dropped from 2011 to 2015 in all LGAs except the City of Stonnington, which remained the same.

FIGURE 88: REGISTERED MENTAL HEALTH CLIENTS PER 1,000 PEOPLE BY LGA (2011-2015)



Source: DHHS Local Government Area Statistical Profiles 2011 and 2015 (note that 2015 data is latest available)

FIGURE 89: DRUGS AND ALCOHOL CLIENTS PER 1,000 PEOPLE (2011-2015)



Source: DHHS Local Government Area Statistical Profiles 2011 and 2015 (note that 2015 data is latest available)

Home and Community Care Services (HACC)[6]

Home and Community Care (HACC) services provide outreach services to allow people aged 65 and over and people with a disability to live in their communities for longer. Services may include centre-based day respite, transport, basic in-home services and social support.

The HACC 'target population' indicates the number of people eligible to receive services from a HACC program (funded by the Victorian or Australian Government and usually delivered by local government). To determine service levels, a needs assistance measure examines the proportion of 'older and frail people with moderate, severe or profound disabilities'. The size and location of the target population in Victoria is estimated from responses to Census questions on 'need for assistance' with self-care, mobility or communication, counted at an LGA geography.[7]

The rate per 1,000 indicates a relative need of service provision and is used to compare the relative extent of HACC provision in each LGA compared to the population. Because of multiple occasions of service, a given LGA may show more people receiving a HACC service in a year than the count of individuals in the HACC target population.[8]

- The City of Bayside had the highest number of HACC clients in the region and was the only LGA in the region higher than high Victorian average.
- The number of HACC clients appears to be consistent with the proportion of people aged over 65 in each LGA.

TABLE 11: HACC CLIENTS (2015)

	HACC clients aged 65+/1,000 head
Bayside	1038.0
Boroondara	774.2
Glen Eira	731.2
Stonnington	792.3
Metro Melbourne	688.5
Victoria	973.3

Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

[6] On 1 July 2016 funding and management of HACC services for older people were replaced by Commonwealth Home Support Programme (CHSP) and by HACC Program for Younger People (HACC PYP). The use of former HACC data will therefore not set a future benchmark to measure progress.

[7] The target population is adjusted by removing those living in residential aged care or DVA card holders.
[8] Department of Health and Human Services, *Data item definitions: 2015 local government area profiles*, 'Home and Community Care (HACC) clients', November 2015.

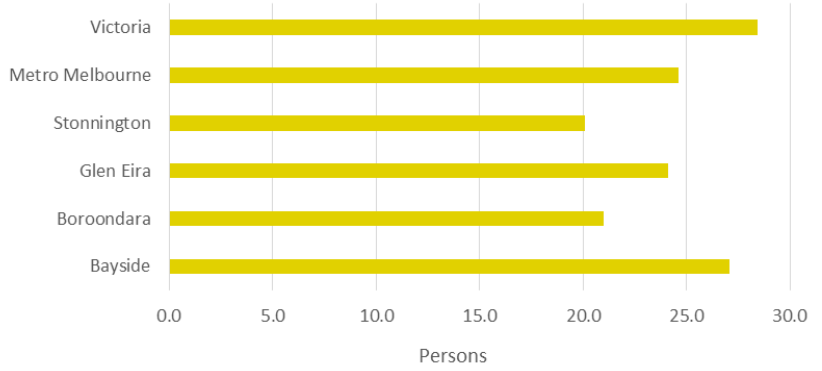
Ambulatory Care Sensitive Conditions (ACSC)

Ambulatory Care Sensitive Conditions (ACSC) describe conditions for which hospitalisation could be avoided through public health interventions and early disease management, usually delivered in an ambulatory setting such as primary care.

High rates of hospital admissions for ACSCs may provide indirect evidence of problems with patient access to primary healthcare, inadequate skills and resources, or disconnection with specialist services[9].

- The number of ACSC clients per 1,000 population varies.
- In Stonnington and Boroondara LGAs the rates of potentially preventable hospitalisations (PPH) is lower than the Victorian and metropolitan averages.
- The City of Bayside is the only LGA to have a higher number of ACSC clients per 1,000 of the population than metropolitan Melbourne and Victoria. Stonnington and Boroondara LGAs reported lower rates. This may reflect the older population of the area.

FIGURE 90: ACSC (PPH) SEPARATIONS FOR ALL CONDITIONS PER 1,000 POPULATION (2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

[9] Source: Victorian Admitted Episode Dataset (VAED), Department of Health and Human Services; Estimated Resident Population (ERP, Australian Bureau of Statistics (ABS).

Access to general practitioners (GPs)

Access to general practitioners (GPs) contributes to a region's community services and resident wellbeing. It also helps describe an area's level of healthcare resources.

- The number of GPs per 1,000 head of population was higher in all LGAs in the Inner South East Metro Region than in metropolitan Melbourne and Victoria.
- Stonnington and Bayside LGAs had the highest numbers of GPs per 1,000 head of population.
- All areas experienced an increase in GP numbers between 2011 and 2015 except for the City of Stonnington where a small decrease occurred.

FIGURE 91: NUMBER OF GENERAL PRACTITIONERS PER 1,000 PEOPLE BY LGA (2011-2015)

Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

Type 2 diabetes

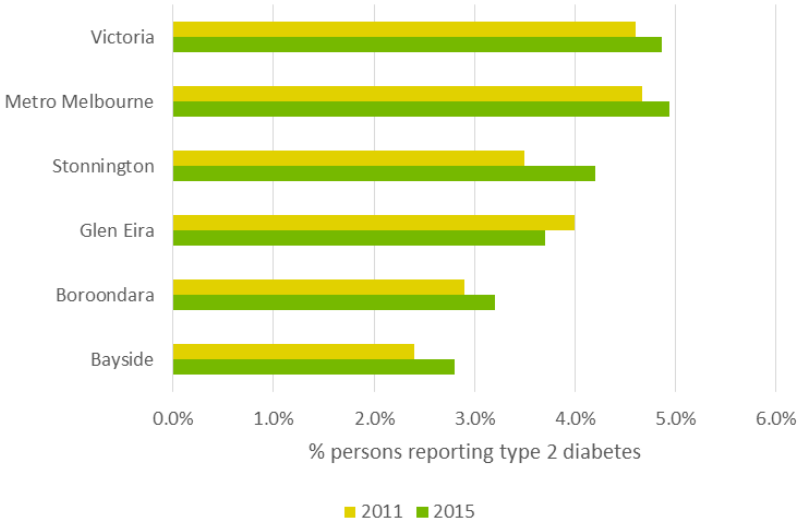
People with diabetes are at greater risk of chronic health conditions and its occurrence is closely linked with the prevalence of obesity. The number of diabetes cases in the population indicates a higher risk of chronic health conditions, including cardiovascular disease, blindness, amputation, kidney disease and depression.

People from the most socioeconomically disadvantaged areas are more likely to have Type 2 diabetes. Males in the lowest socioeconomic group were almost twice as likely to report Type 2 diabetes as those in the highest socioeconomic group. For females, the rate in the lowest socioeconomic group is 2.5 times that in the highest socioeconomic group.[10].

The number of new cases of diabetes helps to predict future needs for health services and to evaluate the effectiveness of prevention programs.

- The prevalence of Type 2 diabetes is low in all LGAs compared with the metropolitan Melbourne and Victorian average.
- Incidence of diabetes increased in all LGAs except the City of Glen Eira, which experienced a small reduction in incidence rates between 2011 and 2015.

FIGURE 92: INCIDENCE OF TYPE 2 DIABETES BY LGA (2011-2015)



Source: DHHS Local Government Area Statistical Profiles 2011 and 2015 (note that 2015 data is latest available)

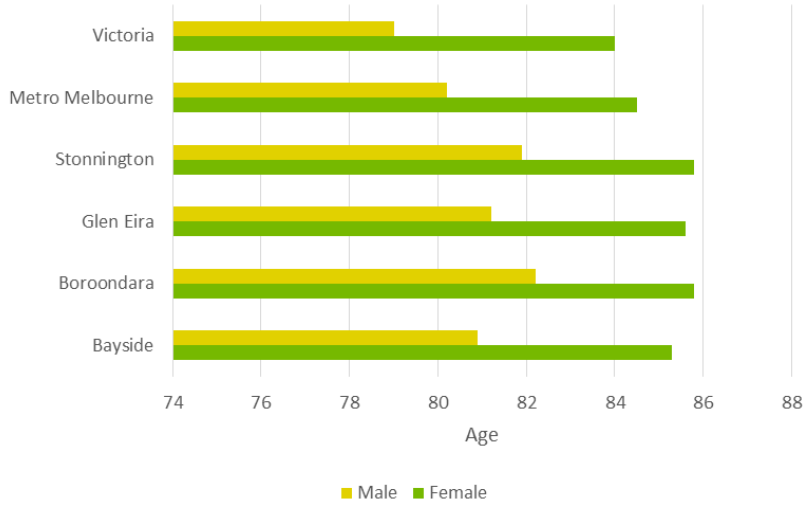
[10] AIHW 2002

Life expectancy at birth

Life expectancy at birth is an indicator of living standards, lifestyle and education factors, as well as access to quality health services.

- Life expectancy for females is higher than males in all LGAs in the region, in line with metropolitan Melbourne and Victorian averages.
- Life expectancy for males is higher than the metropolitan Melbourne and Victorian averages in all LGAs in the region.

FIGURE 93: LIFE EXPECTANCY AT BIRTH (2015)



Source: DHHS Local Government Area Statistical Profiles, 2015 (note that 2015 data is latest available)

5.8 Early childhood outcomes

The importance of the early years of childhood development is clear, with early life experiences affecting lifelong health and wellbeing in several ways.

Birth weight and immunisation

Birth weight is the bodyweight of a newborn at birth. It can be affected by the mother's health during pregnancy, pharmaceutical consumption or lifestyle. Birth weight has also been theorised to correlate to obesity and diabetes.

The Australian Childhood Immunisation Register (ACIR) provides information about vaccine coverage at 12 months, 24 months and six years of age. The immunisation rate is measured as children who have received all the standard immunisations appropriate to their age.

- The percentage of low birth weight babies is consistent and below metropolitan Melbourne and Victorian rates in all LGAs.
- Low birth weight appears to be linked to areas with higher rates of socio-economic disadvantage.
- Rates of immunisation are also relatively consistent across the region and in line with metropolitan Melbourne and Victorian trends. The decrease in the number of children fully immunised at the age of two was consistent across the region.

TABLE 12: LOW BIRTH WEIGHT AND IMMUNISATION RATE BY LGA (2015)

	% low birth weight babies 2012-14	% children fully immunised at 12 months of age 2015	% children fully immunised at 24 months of age 2015
Bayside	5.9%	92.8%	88.6%
Boroondara	5.8%	93.1%	90.4%
Glen Eira	5.8%	92.8%	89.9%
Stonnington	5.8%	92.4%	88.4%
metropolitan Melbourne	6.3%	92.0%	89.5%
Victoria	6.3%	92.2%	89.7%

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Child protection substantiations

Child protection substantiations refers to children who receive child protection services, including those subject to an investigation notification, on a care and protection order, and/or are in out-of-home care.

All LGAs were well below the metropolitan Melbourne and Victorian averages.

TABLE 13: CHILDREN PROTECTION SUBSTANTIATIONS (2015)

	Child protection substantiations / 1,000 head
Bayside	4
Boroondara	2
Glen Eira	3
Stonnington	5
Metro Melbourne	9
Victoria	12

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Development vulnerability

The Australian Early Development Centre (AEDC) identifies five domains of early childhood development, measured at the commencement of primary school:

- physical health and wellbeing
- social competence
- emotional maturity
- language and cognitive skills (school-based)
- communication skills and general knowledge.

Patterns of childhood vulnerability according to the AEDC domains largely follow that of the rate of child protections.

The proportions of developmentally vulnerable children in emotional domains and in two or more domains were well below the metropolitan Melbourne and Victorian proportions in all LGAs.

TABLE 14: PERCENTAGE OF DEVELOPMENTALLY VULNERABLE CHILDREN (2015)

Column heading	% Children developmentally vulnerable in two or more domains	% Children developmentally vulnerable in emotional domain
Bayside	4.3%	5.1%
Boroondara	4.9%	4.7%
Glen Eira	5.6%	5.6%
Stonnington	3.7%	5.1%
Metro Melbourne	9.5%	7.6%
Victoria	9.9%	8%

Source: Social Health Atlases, 2015 (note that 2015 data is latest available)

Crime

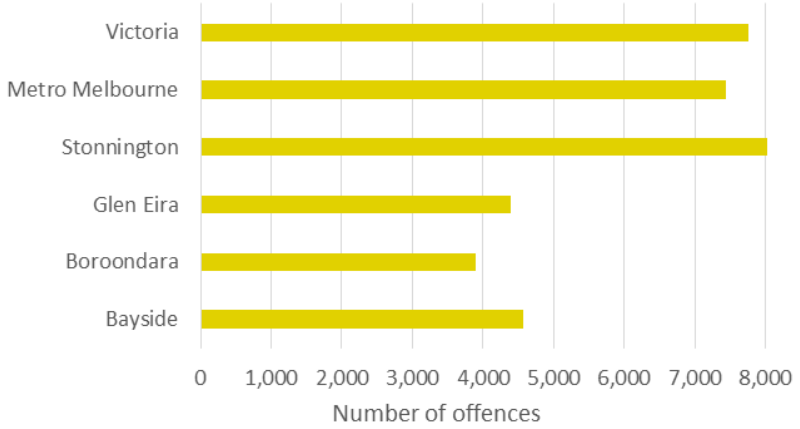
The rate of crime in an area may correlate with its level of socio-economic disadvantage, where a higher crime rate can be associated with higher socio-economic disadvantage and vice versa. Understanding an area's crime rate allows policymakers to allocate policing resources or evaluate other measures that might help to reduce crime rates.

There is a discrepancy between publicly-perceived crime rates and recorded crime statistics. Crime rate incorporates myriad offence types, which could mean varying growth trends between different offences. For instance, the increasing rate of a certain offence can co-exist with an overall dropping crime rate.

The Crime and Statistics Agency provides data on offence rates, measured as offence rate per 100,000 of the population during a given period.

- The City of Stonnington had higher offence rates compared to the rest of the Inner South East Metro Region and higher than those of metropolitan Melbourne and Victoria in 2018.
- Glen Eira, Boroondara and Bayside LGAs all have lower offence rates compared to metropolitan Melbourne and Victoria.

FIGURE 94: CRIME OFFENCE RATE PER 100,000 POPULATION (2018)



Source: Crime Statistics Agency, 2018

Wellbeing

The Self-Reported Personal Wellbeing Index, also known as the Subjective Wellbeing Index, is published in the VicHealth Indicators Survey. It measures not only illness but people's mental health and their perceptions about their lives.

According to the Victorian Health Promotion Foundation, higher scores on the Subjective Welling Index indicate better mental and physical health, higher productivity and stress-coping abilities, and higher engagement in social and humanitarian activities.

'Sense of safety walking alone after dark' is an indicator published by Social Health Atlases to understand how people feel about their community during night time.

Note both datasets have limitations as they are subjective measurements based on self reporting.

- People living in Bayside, Boroondara and Stonnington LGAs reported similar scores of subjective wellbeing. Results are slightly higher than the Victorian average.
- All LGAs in the region reported higher scores for the Sense of safety walking alone after dark index than the metropolitan Melbourne and Victorian rates.

TABLE 15: SUBJECTIVE WELLBEING INDEX

LGA	Subjective wellbeing index
Bayside	78.4
Boroondara	78.8
Glen Eira	76.9
Stonnington	78.3
Victoria	77.3

Source: VicHealth Indicators Survey, 2015 (note that 2015 data is latest available)

TABLE 16: SENSE OF SAFETY WALKING ALONE AFTER DARK

LGA	ASR per 100 (Age standardised rate)
Bayside	68.4
Boroondara	70.8
Glen Eira	65.6
Stonnington	69.4
Metro Melbourne	51.9
Victoria	53.0

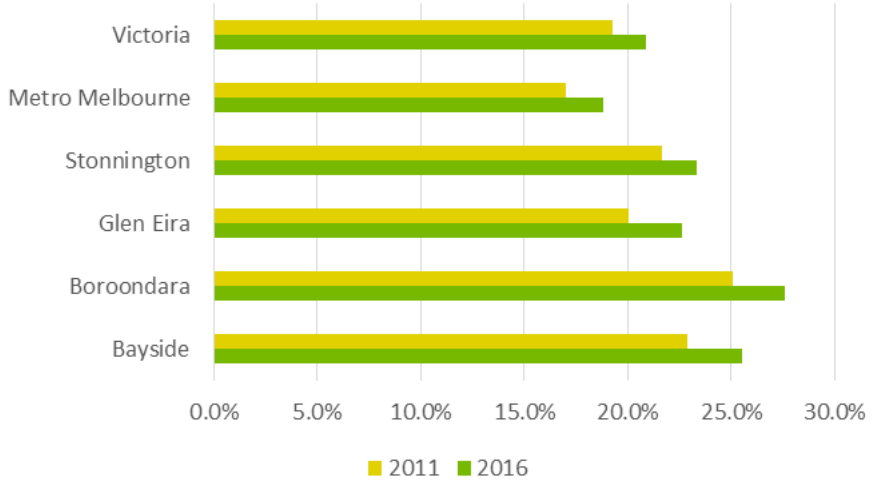
Source: Social Health Atlases, 2018

Volunteering

Volunteering rate reflects an area's level of participation in volunteer work. It is calculated based on the number of people who volunteer among the total population.

- All LGAs in the Inner South East Metro Region experienced an increase in the volunteering rate between 2011 and 2016.
- Volunteering rates were higher than the metropolitan Melbourne and Victorian average in all LGAs.
- Boroondara and Bayside LGAs report slightly higher rates of volunteering, which may reflect the age and employment profiles of those two communities.

FIGURE 95: PERCENTAGE OF POPULATION VOLUNTEERING (2011-2016)



Source: ABS Census 2011 and 2016

6. ENVIRONMENTAL

ENVIRONMENTAL INDICATORS

The Infrastructure Victoria environmental indicators that underpin this section are:

- Open space, including green space
- Land
- Water assets
- Canopy cover
- Stream condition
- Coastal and bay health
- Air quality
- Flood risk
- Sea level rise
- Bush fire
- Urban heat island effect and heat risk
- Contaminated groundwater and other sites
- Access and use of green space
- Visitation to parks
- Water security
- Renewable energy
- Extractives industry
- Waste

REGIONAL OVERVIEW

The Inner South East Metro Region's environmental profile is characterised by:

- little natural environment
- a large proportion of mixed open space in the form of sportsfields and recreation
- bay access
- no open landfill sites.

ENVIRONMENTAL STRENGTHS

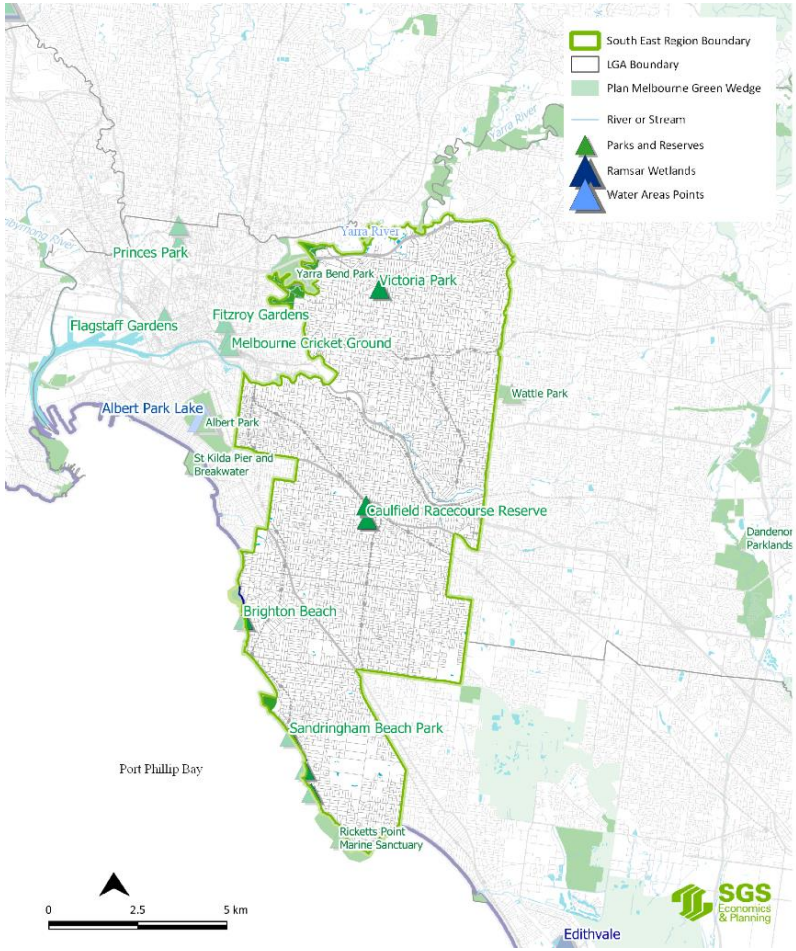
- A large proportion of residents can access at least one type of open space.
- High levels of visitation to green space.
- Relatively minimal risk of environmental hazards.

ENVIRONMENTAL CHALLENGES

- Limiting risk and impacts of hazards associated with climate change such as sea level rise (Bayside LGA) and heat vulnerability.
- Maintaining and/or improving asset condition including tree canopy cover, waterway health, and atmosphere pollution.
- Managing the impact that economic activity has on the environment, including waste water and physical waste.
- Managing dependent relationships with the environment to ensure water and climate security.

6.1 Overview and key environmental features

FIGURE 96: KEY ENVIRONMENTAL FEATURES, INNER SOUTH EAST METRO REGION



Source: (Department of Environment, Land, Water and Planning, 2018a) *Map does not cover full portfolio of key environmental assets

Prior to European settlement the Inner South East Metro Region was mainly woodland. The region was some of the first land in Melbourne to experience intensive development. Land auctions took place only a few years after those in the Inner Metro Region.

Figure 96 shows key environmental terrestrial assets in and outside the Inner South East Metro Region. The region does not contain many large natural parks or gardens. Instead, it is home to mixed natural assets such as sports fields. Key open space assets in the region include Victoria Park and Caulfield racecourse.

Outside of the region, people can access natural areas such as Yarra Bend Park and Albert Park.

Coastal areas include Sandringham Beach, Brighton Beach and Ricketts Point Marine Sanctuary.

Port Phillip Bay is accessible from these coastal areas. The Yarra River runs along the northern boundary of the region.

6.2 Environmental assets

The stock of environmental assets underpins the capacity of the region to provide ecosystem services that benefit the metropolitan population.

Open space and green space

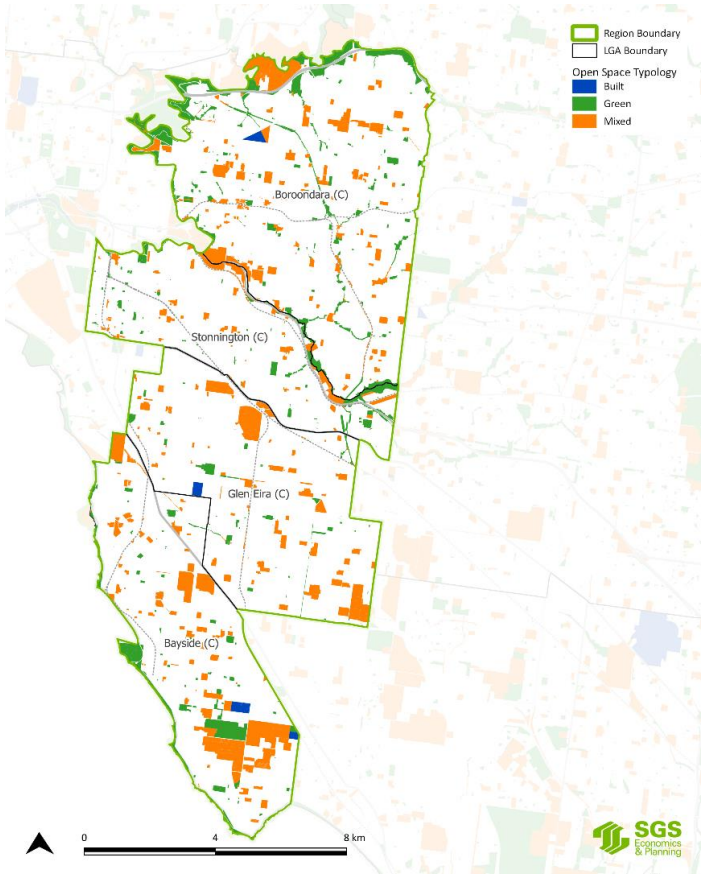
The Inner South East Metro Region includes 2,334 hectares of land defined as open space,[11] of which approximately 35 per cent can be classified as green space (Victorian Planning Authority, 2017c).[12] Out of the metropolitan Melbourne regions it has the smallest share (14 per cent) of open space.

The Victorian Planning Authority (VPA) open space data set defines open space across 12 categories. A typology of green, mixed and built open space has been applied across the 12 open space categories (see Figure 98 for the groupings of categories into the typology).[13]

Figure 97 and Figure 98 show the different types of open space existing across the region in 2017. Accessibility to open space is discussed in section 6.5.

- Sportsfields and organised recreation is the largest mixed open space type.
- Boroondara, Stonnington and Glen Eira LGAs are among the 10 lowest metropolitan LGAs with respect to the percentage of open space relative to total land area.

FIGURE 97: OPEN SPACE CATEGORIES (2017)



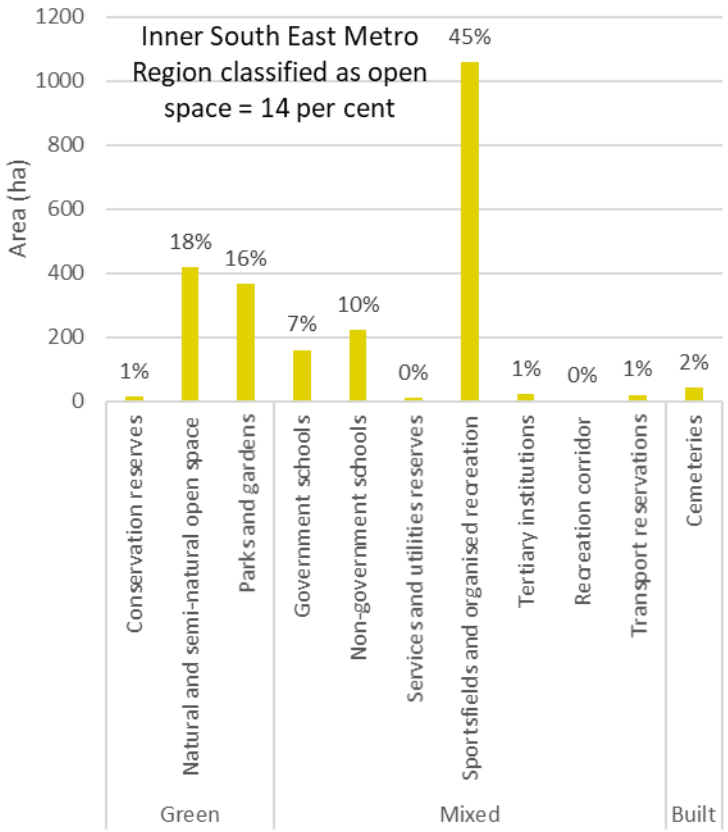
Source: (Victorian Planning Authority, 2017c)

[11] Open space is any piece of land that is provides some natural or cultural benefit. Green wedge zones that are primarily used for agriculture are not considered as open space because of the potential disamenity arising from agricultural activity.

[12] The interpretation of green space in this report relates to a vegetated variant of open space. Urban vegetation in the form of house gardens/yards and agriculture was not considered to be open space.

[13] Green space refers to areas that are predominately natural and contain little built infrastructure, mixed space refers to areas that have been altered from their natural state for economic purposes but still contain areas of green space, and built space refers to areas that contain predominately built infrastructure.

FIGURE 98: EXISTING OPEN SPACE TYPES (2017)



Source: (Victorian Planning Authority, 2017c) *Share of total green space in the region is provided on top of the green space type bars. Note that this graph does not consider proposed open space.

Table 17 and Figure 99 illustrate the VPA open space data by LGA. Table 17 shows the area, in hectares, of open space in each LGA, while Figure 99 shows the share of open space in each LGA that can be attributed to green, mixed and built open space.

- Mixed open space is the dominant category for all LGAs.
- The City of Stonnington has a small amount of open space compared to the other LGAs.

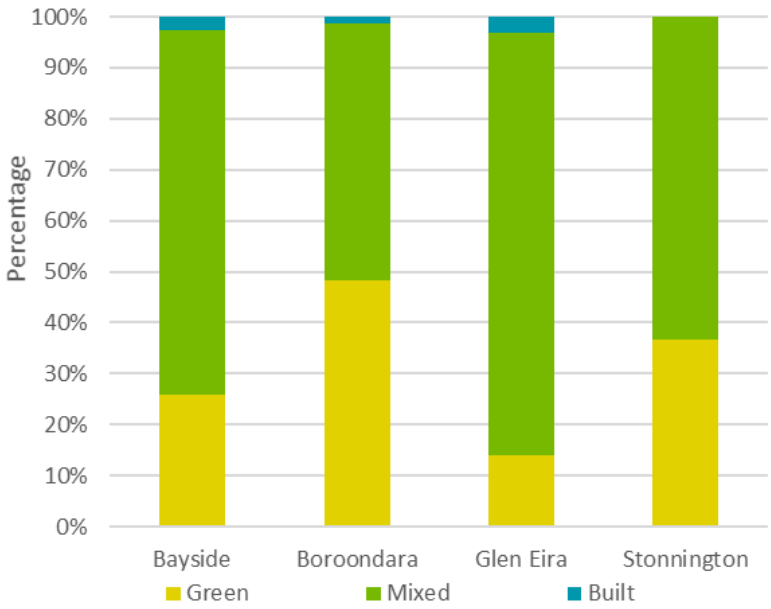
Land use planning and urban design processes will determine future open space in areas under development. Assessment of trends over time would highlight the extent to which the share of open space is changing with respect to residential development.

TABLE 17: OPEN SPACE TYPE (HA) BY LGA (2017)

LGA	Green	Mixed	Built	Total
Bayside	189	524	19	732
Boroondara	463	484	12	959
Glen Eira	54	320	12	386
Stonnington	94	163	0	257

Source: (Victorian Planning Authority, 2017c) *This table does not consider proposed open space.

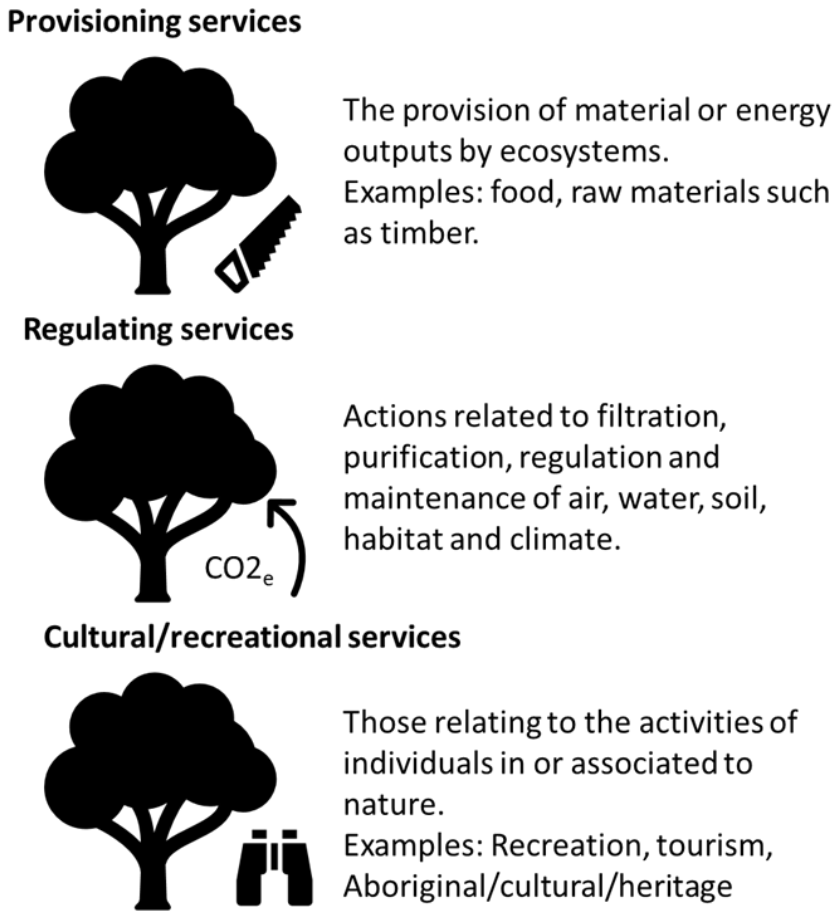
FIGURE 99: OPEN SPACE TYPE (%) BY LGA (2017)



Source: (Victorian Planning Authority, 2017c) *Total open space in each LGA is provided on top of bars. This graph does not consider proposed open space.

The provision of ecosystem services, as defined in Figure 100, varies by environmental asset type and depends on the extent (size) and condition of the asset.

FIGURE 100: ECOSYSTEM SERVICE CLASSIFICATION



Source: IDEEA Group

For example, green open space is likely to provide a range of ecosystem services including provisioning services, regulating services (such as mitigation of urban heat island effects) and cultural/recreation services, while mixed open space is likely to be concentrated on cultural/recreation services that have positive effects on health and wellbeing. Built open space is even more likely to be concentrated on cultural/recreation services.

The ability of environmental assets to provide ecosystem services can be affected by barriers such as accessibility, human activity and degradation. Additional benefits can be realised if assets are made more accessible.

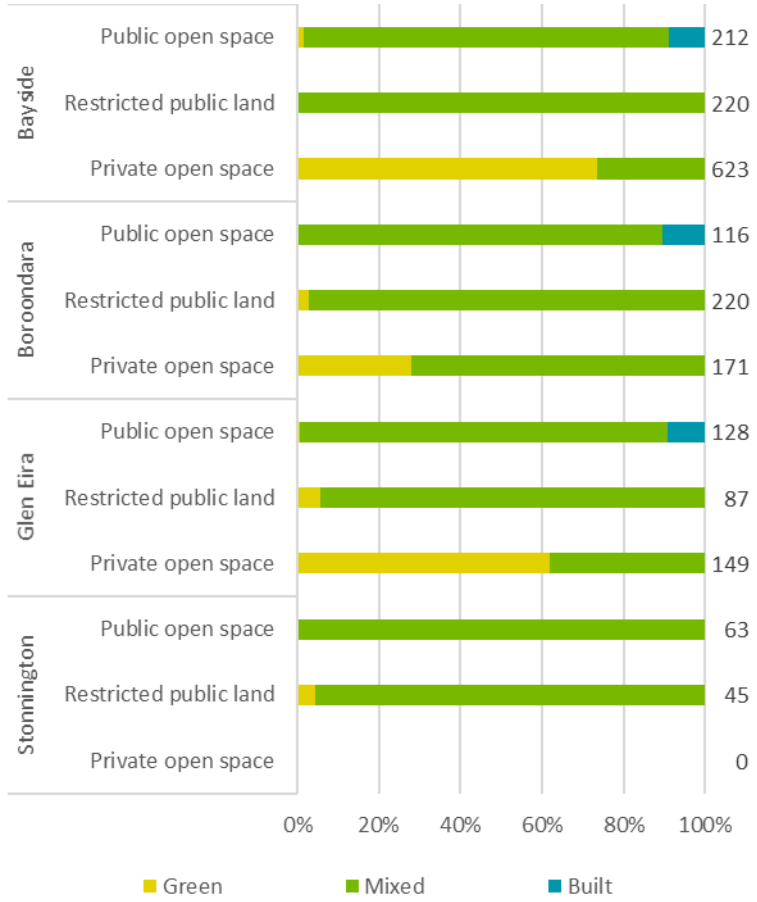
Demand for ecosystem services will continue to rise with population growth. Land is fixed in supply, meaning that under-utilised assets (which can include government and non-government school ovals outside of school hours, as well as other government and some private land) are a source of supply to meet this demand.

Figure 101 illustrates the percentage of open space assets in the region that is either private, restricted public land or public.14 A large percentage of green space is public. Mixed space is a mix of public, private and restricted.

The spatial distribution of public, restricted public, and private land is shown in Figure 102.

Respectively, Figure 103 and Figure 104 indicate the locations of private and restricted open space in the region. These show that government and non-government schools are both accessible to populated areas.

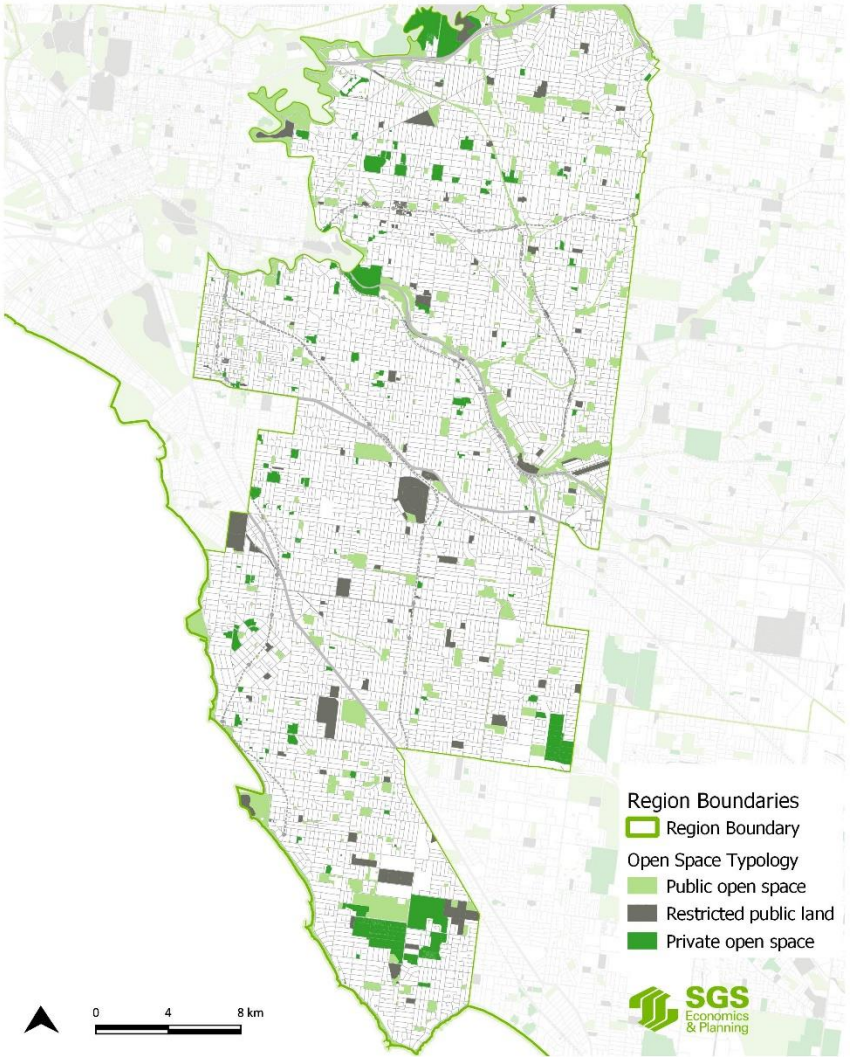
FIGURE 101: OPEN SPACE TYPE BY OWNERSHIP AND LGA (2017)



Source: (Victorian Planning Authority, 2017c) *Numbers to the right of bars are in hectares

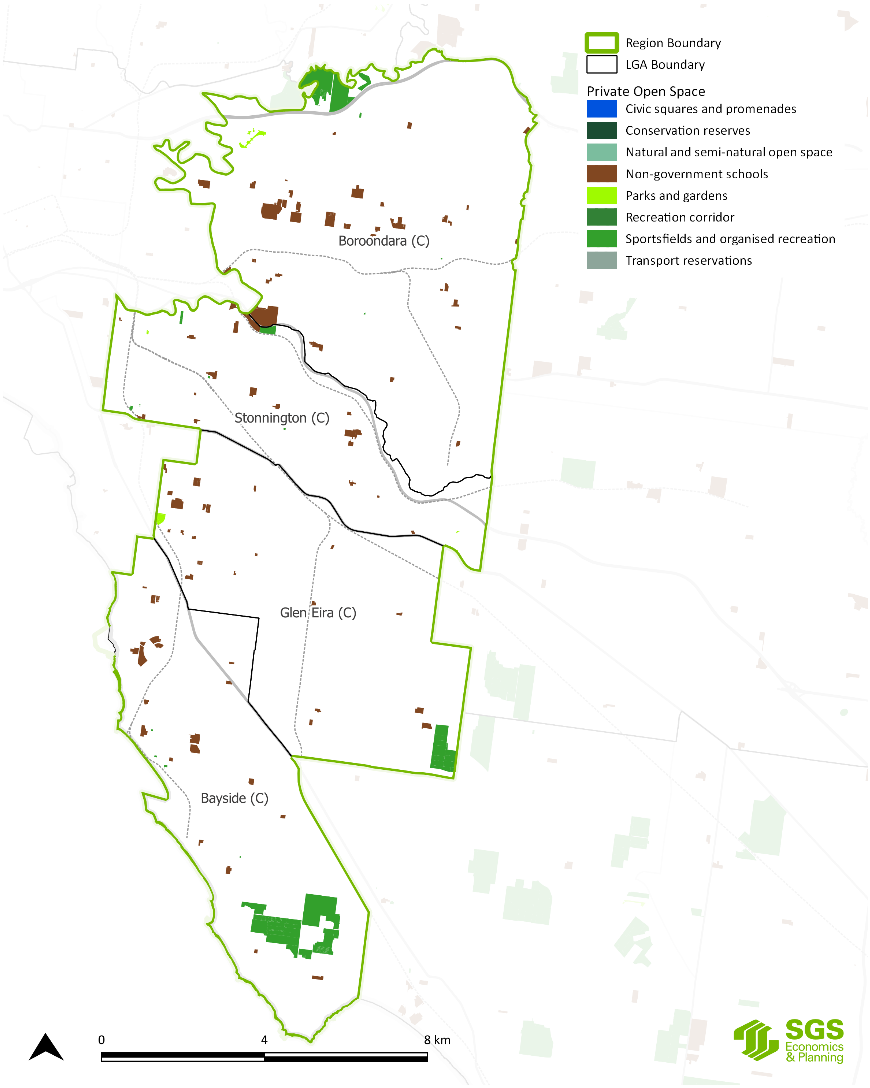
[14] Private open space does not include residential gardens – it includes private schools, private sportsfields, golf courses and race courses, and private conservation and private outdoor shopping plazas/malls.

FIGURE 102: OPEN SPACE BY OWNERSHIP (2017)



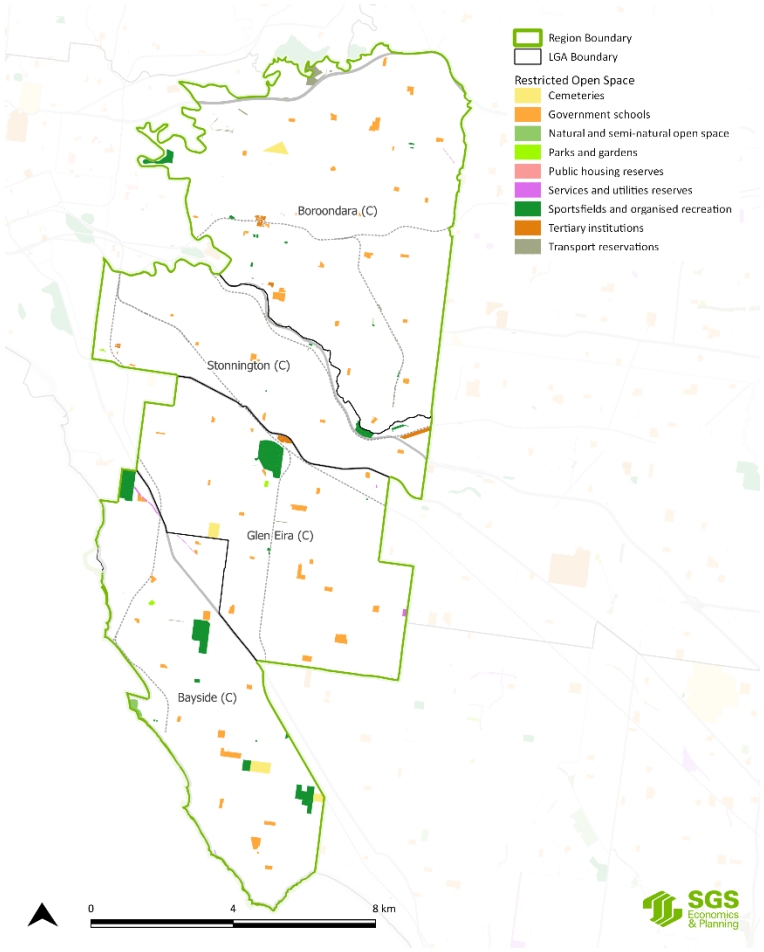
Source: (Victorian Planning Authority, 2017c)

FIGURE 103: LOCATIONS OF PRIVATE OPEN SPACE BY TYPE (2017)



Source: (Victorian Planning Authority, 2017c)

FIGURE 104 LOCATIONS OF RESTRICTED OPEN SPACE BY TYPE (2017)



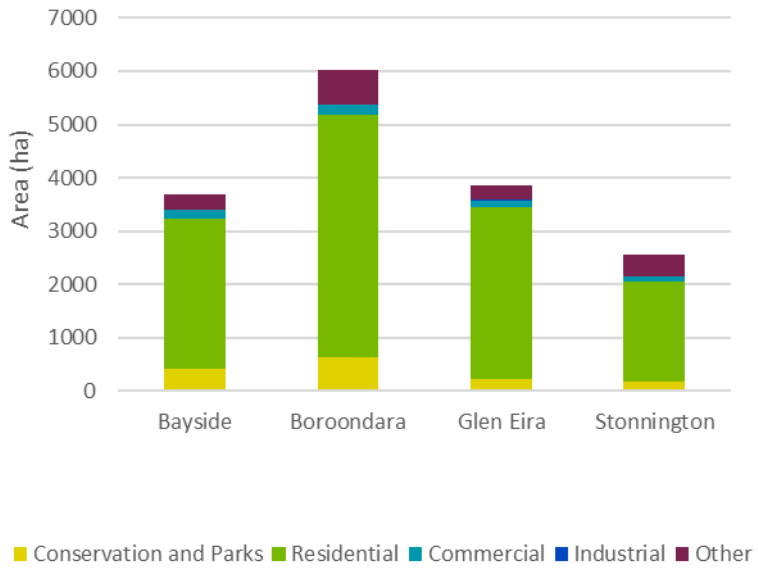
Source: (Victorian Planning Authority, 2017c)

Land use

Land use has been characterised using planning zone data. This data is preferred to Victorian Land Use Information System (VLUIS) data as the VLUIS data does not have spatial specificity for inner metropolitan areas. However, the zoning data does have limitations as it represents preferred land use rather than actual land use and is not as specific in rural areas.

Figure 105, Table 18 and Figure 106 show the distribution of planning zones across the Inner South East Metro Region. The planning data shows a significant proportion of commercial, conservation and parks, and the other category (see notes in Figure 105 for explanation of the other category).

FIGURE 105: PLANNING ZONES BY LGA (2016)



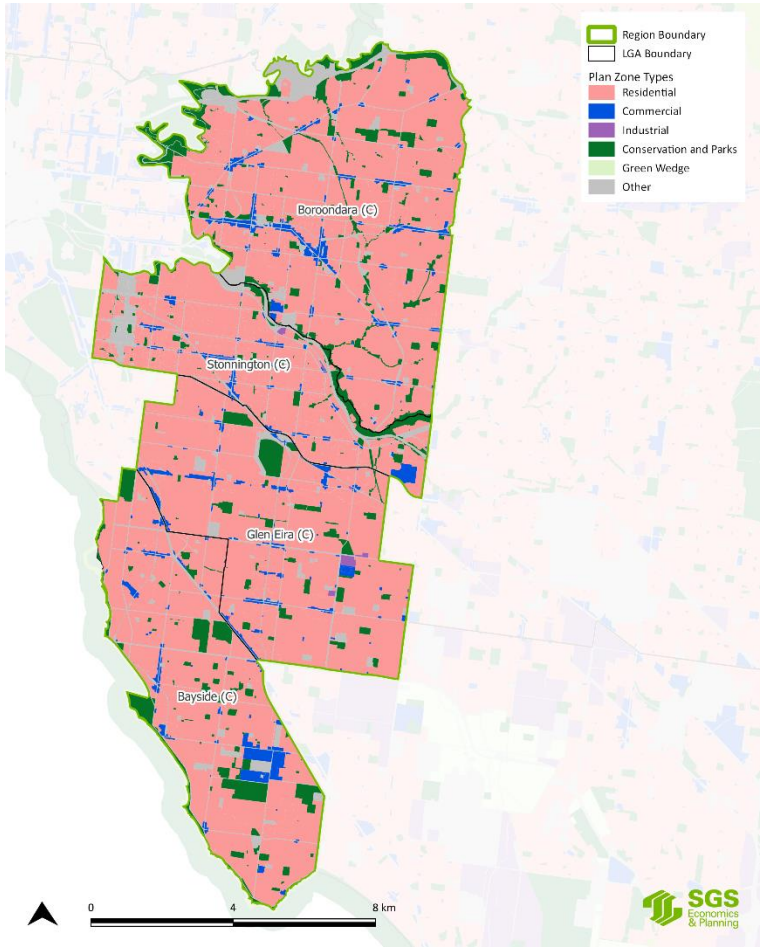
Source: (Department of Environment, Land, Water and Planning, 2018b). Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

TABLE 18: SHARE OF TOTAL AREA BY DIFFERENT PLANNING ZONE TYPES (2016)

	Bayside	Boroondara	Glen Eira	Stonnington
Commercial	4%	3%	3%	3%
Conservation and Parks	12%	10%	6%	7%
Industrial	0%	0%	1%	0%
Other	8%	11%	7%	16%
Residential	76%	76%	83%	73%
Total	100%	100%	100%	100%

Source: (Department of Environment, Land, Water and Planning, 2018b). *Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

FIGURE 106: PLANNING ZONES (2016)



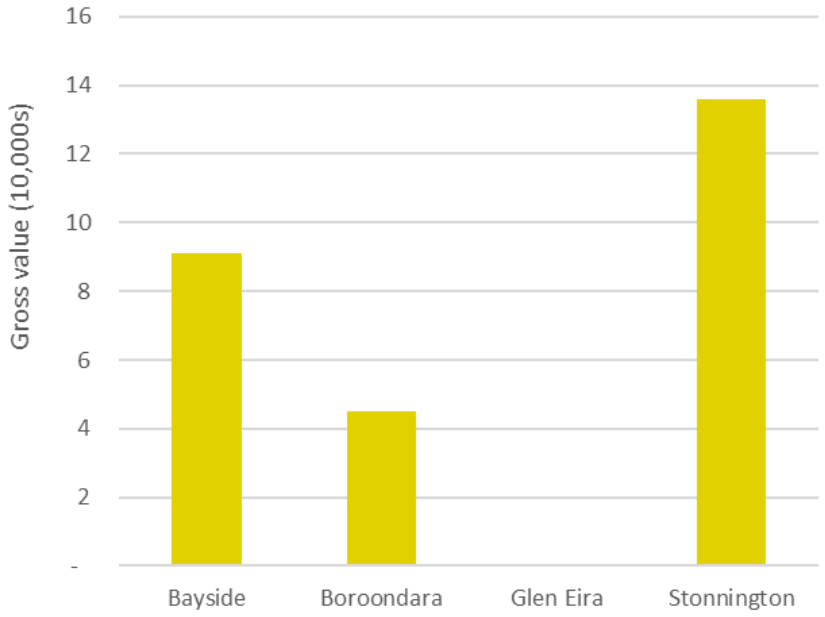
Source: (Department of Environment, Land, Water and Planning, 2018b). *Other includes both special purpose zones and public land zones (excluding parks and conservation). Examples of special purpose zones are activity centre zones and capital city zones. Examples of public land are education zones and health and community zones.

All land within the region is within the urban growth boundary. Sensitive areas of land are likely those included in open space classifications. The VLUIS data does not describe land use change over time well due to the lack of variation in inner urban areas. As a result, this type of analysis cannot be provided for the region.

Figure 107 shows the value of agricultural production in 2015-16. The City of Stonnington generates the highest gross value, followed by the City of Bayside.

Table 19 shows the percentage of value contributed by different agricultural products for each LGA. For Stonnington, Bayside and Boroondara LGAs, this is entirely nurseries, cut flows or cultivated turf. This is higher than the metropolitan and Victorian average.

FIGURE 107: VALUE OF AGRICULTURAL PRODUCTS BY LGA ($10,000)



Source: ABS, Value of Agricultural Commodities Produced, 2016-2017

TABLE 19: SHARE OF TOTAL VALUE, BY AGRICULTURAL COMMODITY AND LGA (2016-17)

	Bayside	Boroondara	Glen Eira	Stonnington	Metro	Victoria
Broadacre crops	100%	100%	0%	100%	1%	9%
Fruit and nuts (excluding grapes)	0%	0%	0%	0%	10%	10%
Hay	0%	0%	0%	0%	3%	4%
Livestock products	0%	0%	0%	0%	9%	29%
Livestock slaughtered and other disposals	0%	0%	0%	0%	26%	37%
Nurseries, cut flowers or cultivated turf	0%	0%	0%	0%	19%	4%
Vegetables for human consumption	0%	0%	0%	0%	32%	8%
Total	0%	0%	0%	0%	100%	100%

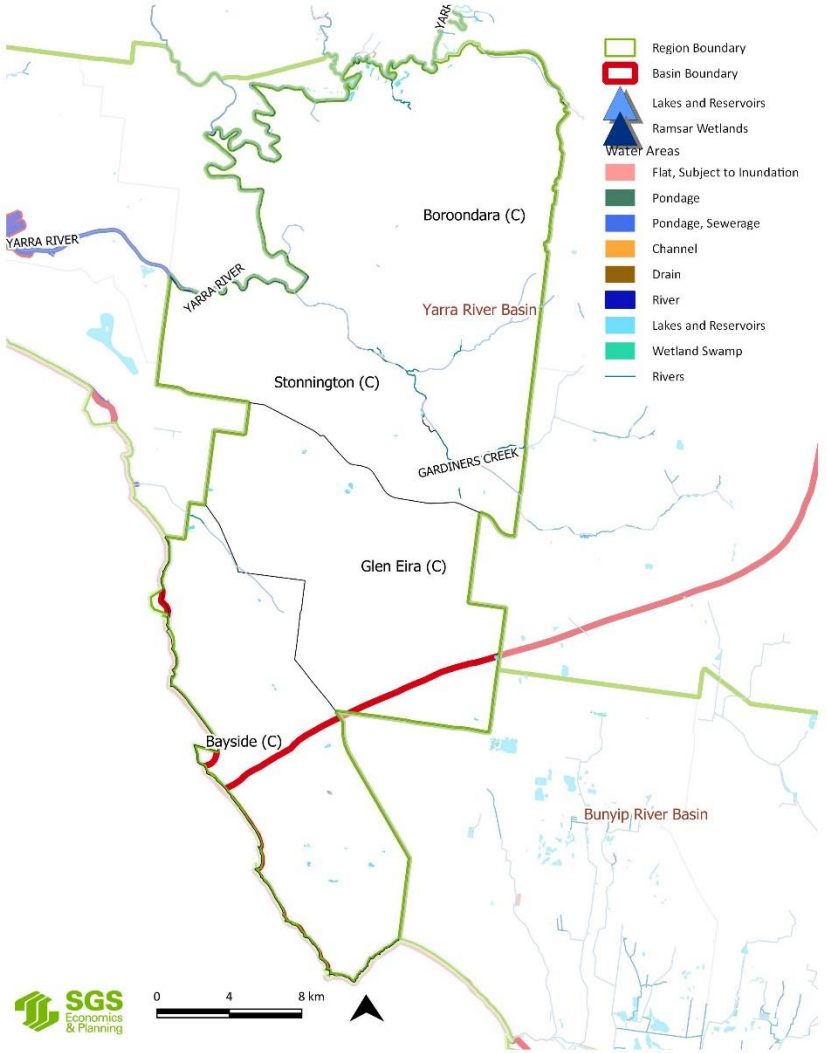
Source: (ABS, Value of Agricultural Commodities Produced, 2016-2017)

Water and wetlands

Water assets are also an important element of the Inner South East Metro Region. Lakes/reservoirs, rivers, wetlands, and marine areas contribute to metropolitan Melbourne's economy and provide space for amenity and recreation.

The key assets are shown in Figure 108. The Yarra River runs along the northern boundary of the region. Brighton Beach and Sandringham Beach are important water/marine assets as is the Rickets Point Marine Sanctuary which is located within the region. Boating clubs in Brighton and Sandringham support the marine and local economies.

FIGURE 108: WATER AND WETLANDS (2016)



Source: (Department of the Environment, 2015 State of Victoria (Department of Environment, Land, 2018c)

6.3 Environmental conditions

The capacity of environmental assets to provide environmental benefits is related to asset condition. Environmental assets that have a higher condition relative to other assets have the capacity to provide a higher quantity of ecosystem services.

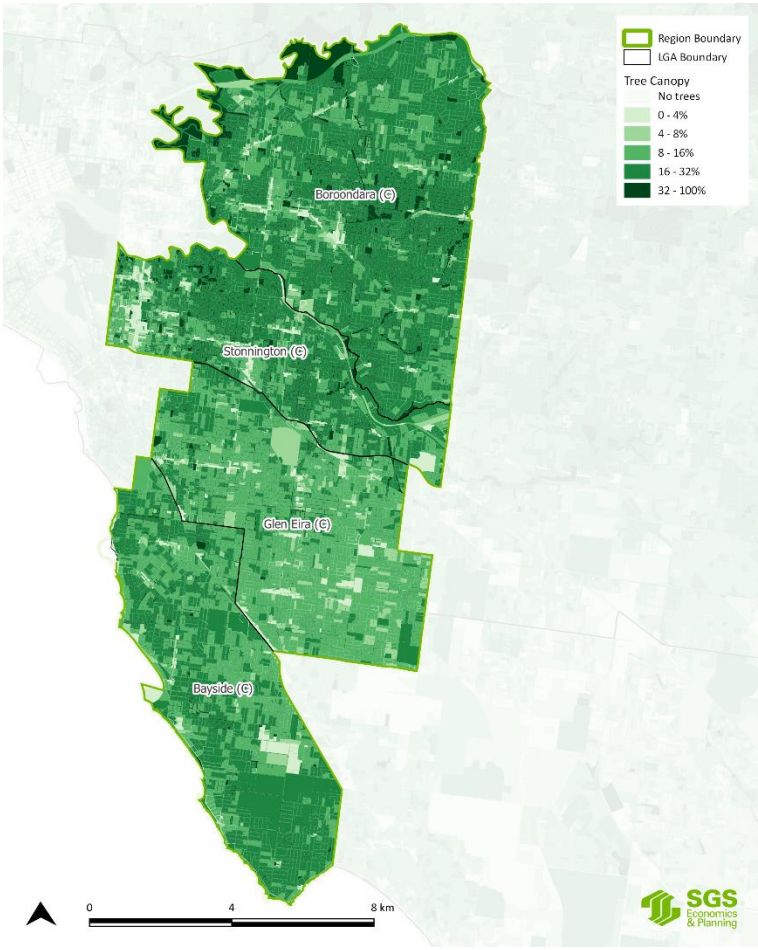
Canopy cover

Canopy cover is a measure of the condition of terrestrial ecosystems that is related to connectivity, shade, mature ecosystems, and higher biodiversity. Canopy cover affects the capacity of the ecosystem to provide benefits related to regulating services (for example, urban heat island mitigation) and cultural services (for example, recreation).

Figure 109 shows the areas of the Inner South East Metro Region that include measurements of canopy cover.

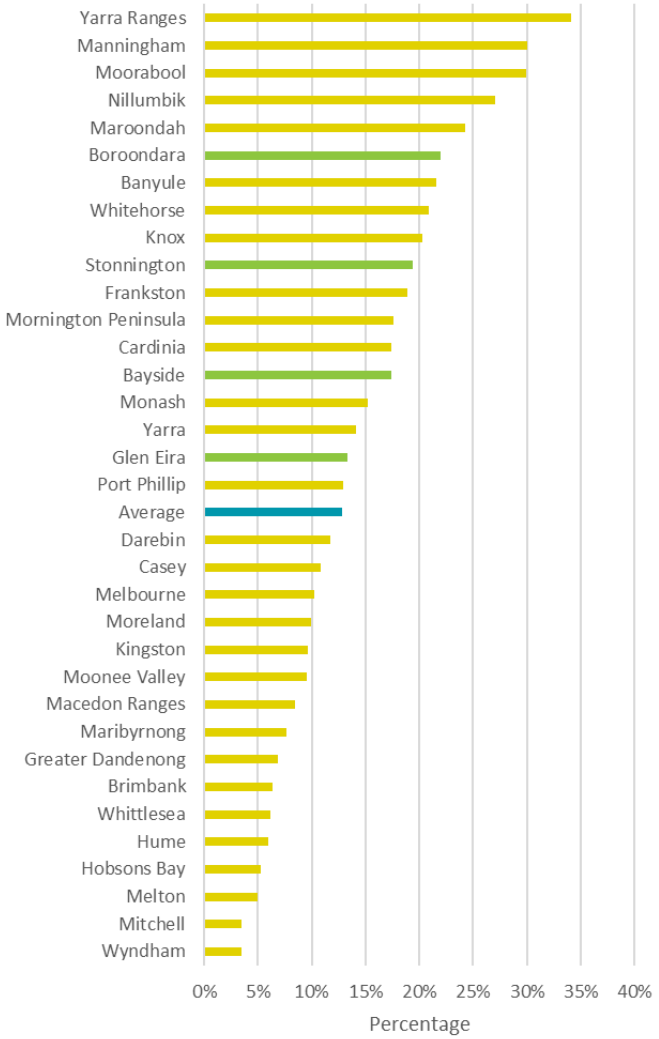
- There is relatively similar tree canopy coverage across the region.
- All LGAs have above-average tree canopy cover compared to other LGAs in the metropolitan region (Figure 110).

FIGURE 109: TREE CANOPY COVER (2014)



Source: (Clean Air and Urban Landscapes Hub, 2018)

FIGURE 110: TREE CANOPY COVER BY LGA (%), ALL METRO LGAS (2014

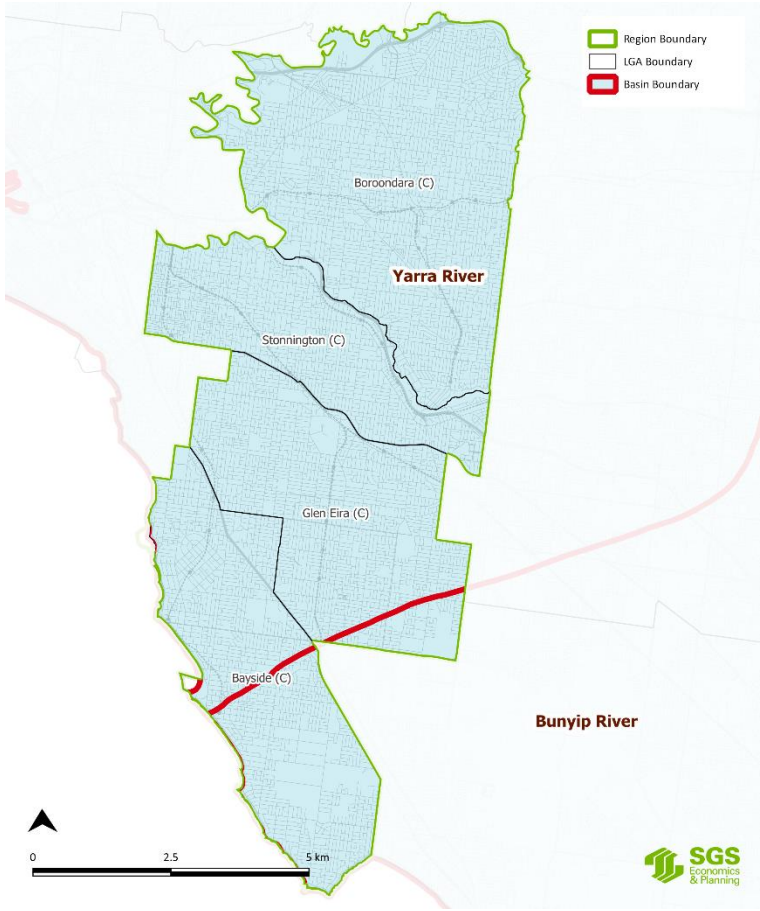


Source: (Clean Air and Urban Landscapes Hub, 2018)

Stream condition.

There is one distinct basin in the Inner South East Metro, the Yarra River Basin. Figure 111 describes the extent of the basin.

FIGURE 111: KEY BASINS (2016)



Source: (Department of Economic Development, Jobs, Transport and Resources, 2015) *See the Eastern and Southern region report for the full extent of the Yarra and Bunyip River Basins

Condition of key reaches in each of the basin is measured using the index of stream condition (DELWP, 2014). The composite measure considers scores of hydrology, physical form, streamside zone, water quality and aquatic life. Data exists for 1999 to 2010.

The number and percentage of reaches where the index of stream condition for the Yarra River Basin is good or excellent is shown in **Error! Reference source not found.** and Figure 113, respectively.

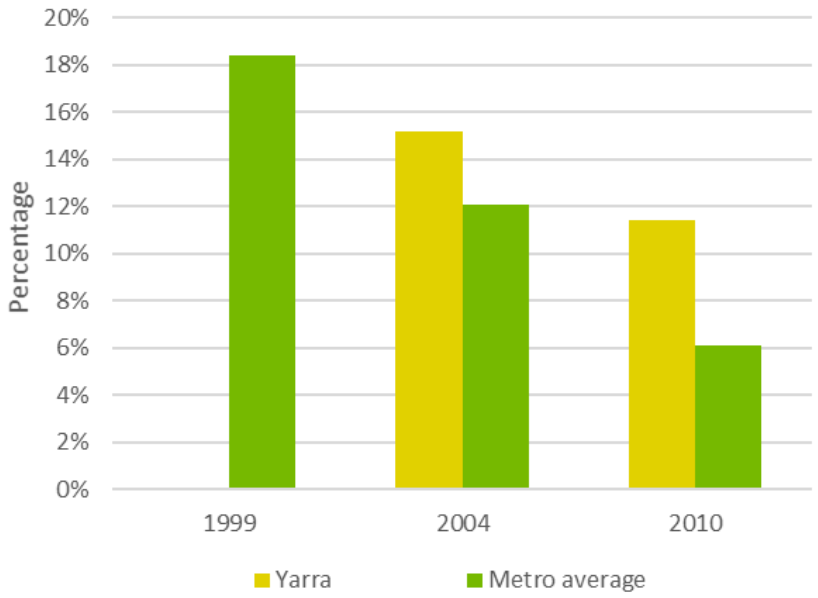
- Good/excellent stream condition is relatively rare in the Yarra River - most observations are in range of very poor to moderate.
- The Yarra River reaches are in better condition than the metropolitan average.
- There is a downward trend in the percentage of reaches classified as good/excellent condition.

FIGURE 112: NUMBER OF REACHES IN GOOD/EXCELLENT CONDITION (1999-2010)

Year	Yarra	Metro average
1999	0.00	3.82
2004	5.00	3.50
2010	4.00	2.01

Source: (Department of Environment, Land, Water and Planning, 2014). *Reaches with an environmental condition greater than 70 percent are deemed to be in excellent condition, while reaches with an environmental condition between 51-70% are deemed to be in good condition.

FIGURE 113: PERCENTAGE OF REACHES IN GOOD/EXCELLENT CONDITION (1999-2010)



Source: (Department of Environment, Land, Water and Planning, 2014). *Reaches with an environmental condition greater than 70 percent are deemed to be in excellent condition, while reaches with an environmental condition between 51-70% are deemed to be in good condition.

Coastal and bay health

Bay health can be affected by upstream pollution, which is often elevated during periods of heavy rain. Estuarine and bay systems such as Port Phillip Bay, Western Port and the Gippsland Lakes are subject to reduced water quality, which usually occurs after extreme weather events when high pollutant levels are discharged from rivers and drains. In the past, this has resulted in algal blooms, high turbidity, fish kills and elevated bacteria levels.

The Port Phillip Bay and Western Port generally demonstrate healthy systems. Several indicators were used to assess the bay, as outlined in the State of the Bays 2016 report (Commissioner for Environmental Sustainability Victoria, 2016). For example:

- nitrogen cycle
- water quality
- intertidal habitat
- seagrass
- reef habitat and dependent species
- fish
- marine dependent birds.

Mordialloc Beach did not meet the recreational water quality objective at the end of the 2016-17 season. It experienced a higher number of days with poorer water quality, which can increase the risk of swimmers being exposed to disease-causing bacteria and other pathogens (EPA Victoria, n.d.). However, 94–97 per cent of the 36 beaches monitored in the bay met EPA's objectives for swimming between 2014 and 2016 (Commissioner for Environmental Sustainability Victoria, 2016). Eight of these are in the Inner South East Metro Region.

Air quality

The atmosphere is integral to human health. By burning a range of materials in the production process, economic activity can impact the condition of the atmosphere. Numerous variables can be used to measure air quality including:

- particulate matter 2.5 (PM2.5) – small particles that can be breathed deep into the lungs
- particulate matter 10 (PM10) – larger particles that can irritate the eyes and throat, and affect symptoms for those with existing heart and/or lung conditions
- carbon monoxide (CO) – a colourless gas found in smoke that displaces oxygen in the blood
- nitrogen dioxide (NO2) and sulphur dioxide (SO2) – which can affect the throat and lungs.

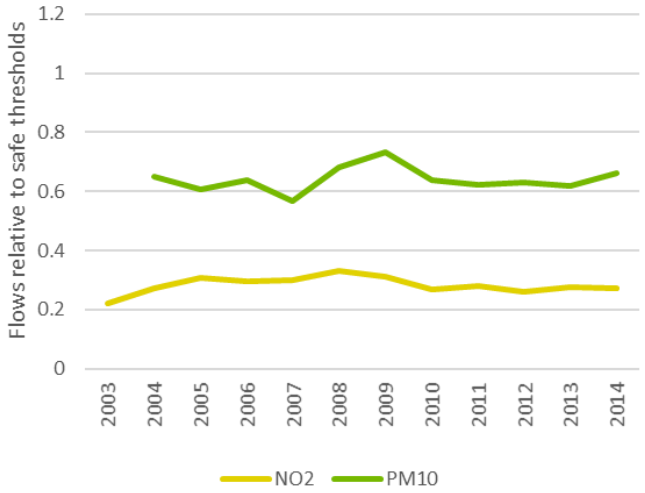
Safe thresholds vary across the variables and by the length of exposure (that is, daily thresholds and yearly thresholds). The World Health Organisation air quality guidelines suggest an annual mean of 20ug/m^3 and a daily mean of 50 ug/m3 as long and short-term thresholds for PM10. The notes below Figure 114 provide the other thresholds. Annual levels of pollution are presented graphically in this section while daily levels are only discussed in the text.

From 2003 to 2014, air quality was monitored by the EPA at Brighton. Data is only available for some of the variables. As a result, the data presented in this report is not comprehensive. Care should also be taken when interpreting the data. Air quality is measured at a point location and there may be variation in air quality across the geography.

Since the beginning of 2003, daily thresholds for PM10 have been exceeded at Brighton. The number of days exceeded has steadily decreased in Brighton since PM10 and is relatively low. There were three days where the safe level was exceeded in 2014.

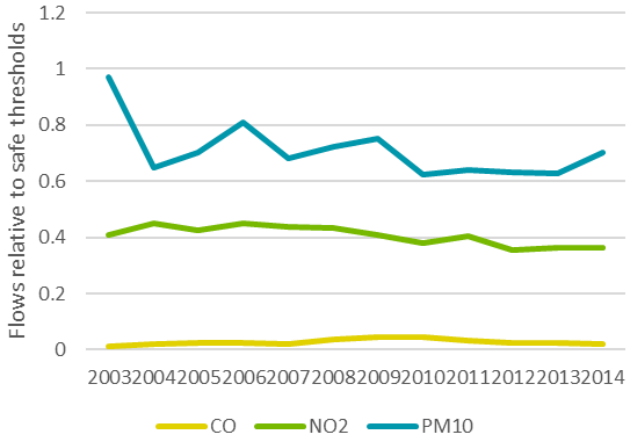
Trends in pollution relative to safe thresholds at Brighton is shown in Figure 114. The level of the variable relative to safe thresholds is shown on the y-axis. A value less than 1 means that flows are less than the safe threshold, a value of 1 means that flows are equal to the safe threshold, and a value greater than 1 means that flows have exceeded the safe threshold. The figures also show the variability in the data collected at each site, with numerous variables missing. Levels of air quality have not exceeded safe long term thresholds at Brighton. Air quality at Brighton is similar to the metropolitan average (see Figure 115).

FIGURE 114: LONG TERM AIR QUALITY THRESHOLD BRIGHTON (2003-2014)



Source: (EPA Victoria, 2014), annual is exceeded if PM2.5>8, PM10>25, O>9, NO2>30, SO2>20

FIGURE 115: LONG TERM AIR QUALITY THRESHOLD METROPOLITAN AVERAGE (2003-2014)



Source: (EPA Victoria, 2014), safe threshold is exceeded if PM2.5>8, PM10>25, O>9, NO2>30, SO2>20

6.4 Environmental risks and hazards

The Inner South East Metro Region has been hit by a flood or storm most years since 2009 (Commonwealth of Australia, 2018). With climate change occurring, it is likely that this trend will continue, and the frequency of such events might rise.

Flood

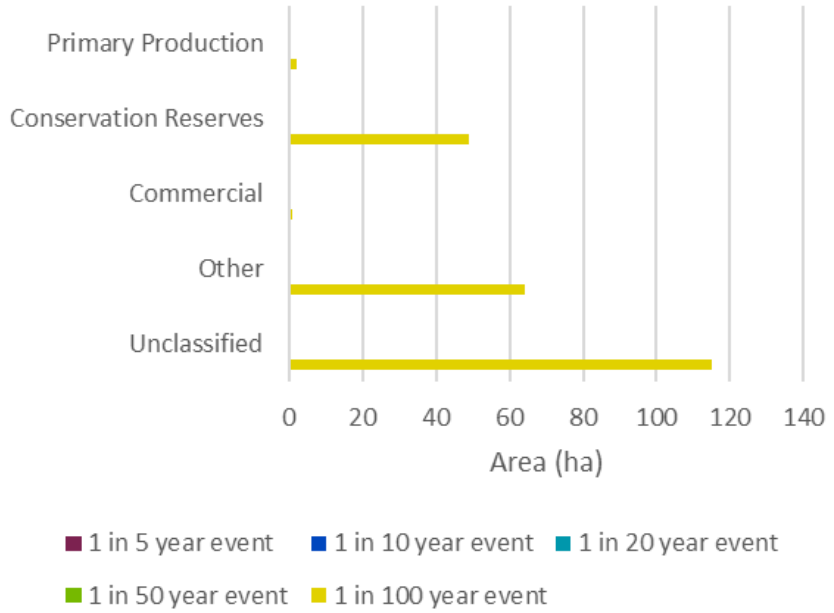
As the effects of climate change increase, areas are at increased risk of flooding because of more extreme weather events.

Figure 116 and Figure 117 shows the projected flood extent for several different probabilistic events. For example, a five-year Average Recurrence Interval (ARI) refers to a one in five-year event, a 10-year ARI refers to a one in ten-year event, and so on. The figures show that:

- There is no area at risk of a one in five-year, to a 1 in 50 year event.
- In the event of a 1 in 100-year flood, the largest areas of land affected includes a small amount of unclassified land.
- Affected areas are located near rivers.
- When compared to other metropolitan regions, the Inner South East Metro Region is one of the least affected by flood.
- ARIs are based on historical events; therefore, there is an increasing chance of such events occurring associated with climate change.

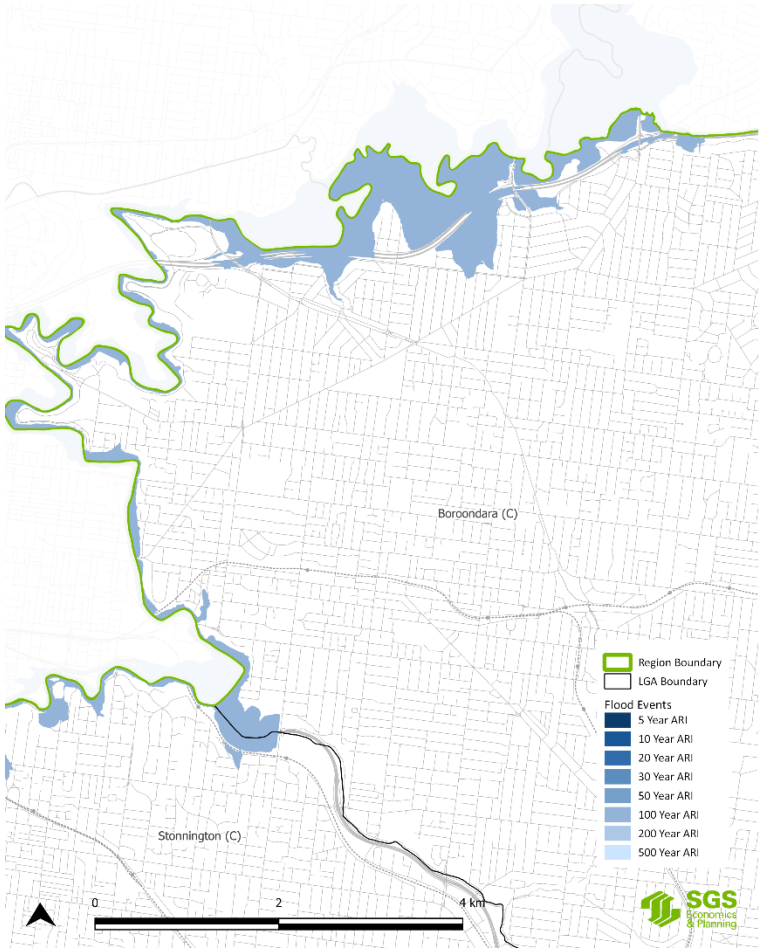
Building applications for properties likely to be affected by flooding are referred to Melbourne Water, which sets conditions on proposed development.

FIGURE 116: LAND AT RISK OF FLOOD (HA), MODELLED, BY LAND USE TYPE (2009)



Source: (Department of Environment, Land, Water and Planning, 2018d) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Other includes Extractive industries, Community Services, Sport, Heritage and Culture, and Infrastructure and Utilities. Unclassified is land not requiring an active assessment or record for rate, tax or levy purposes. Data used is considered to the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

FIGURE 117: MODELLED FLOOD EXTENT (2009)



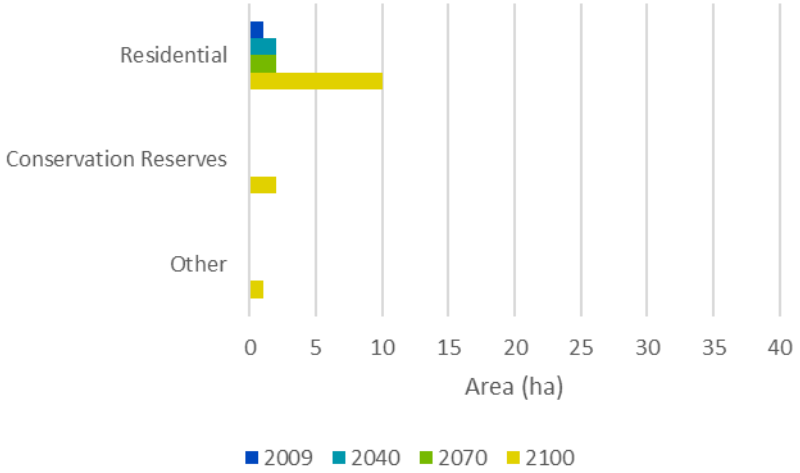
Source: (Department of Environment, Land, Water and Planning, 2018d) Data used is considered to the latest public dataset available. Nuisance and localised flooding may extend beyond what is shown by the data.

Sea level rise

Sea level rise has the potential to significantly impact coastal areas in the Inner South East Metro Region. This impact is also more threatening when considering storm surges. Storm surges are 1 in 100-year events and add to the underlying projection of area inundated by sea level rise. Figure 118, Figure 119, Figure 120 and Figure 121 show that:

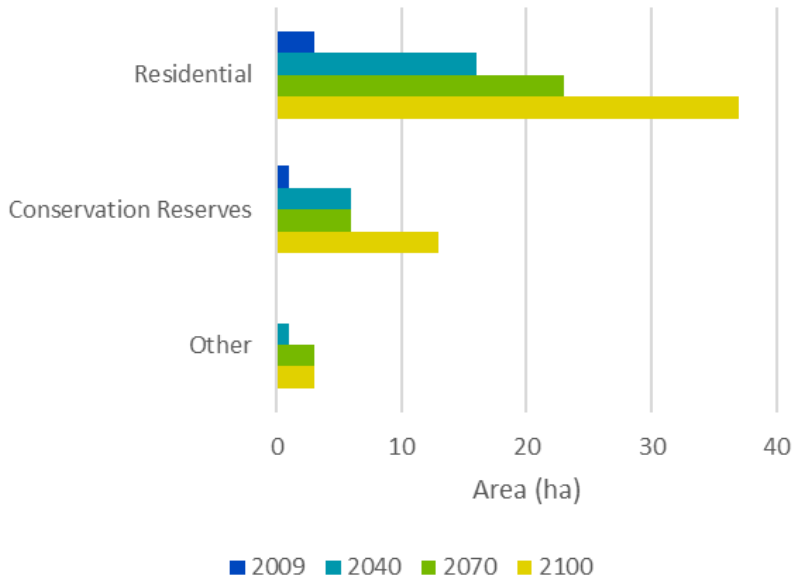
- There is a very small amount of residential and conservation areas that may be affected by sea level rise and storm surge.
- Sea level rise occurs in areas along the coast.

FIGURE 118: PROJECTED AREAS INUNDATED, SEA LEVEL RISE (2009-2100)



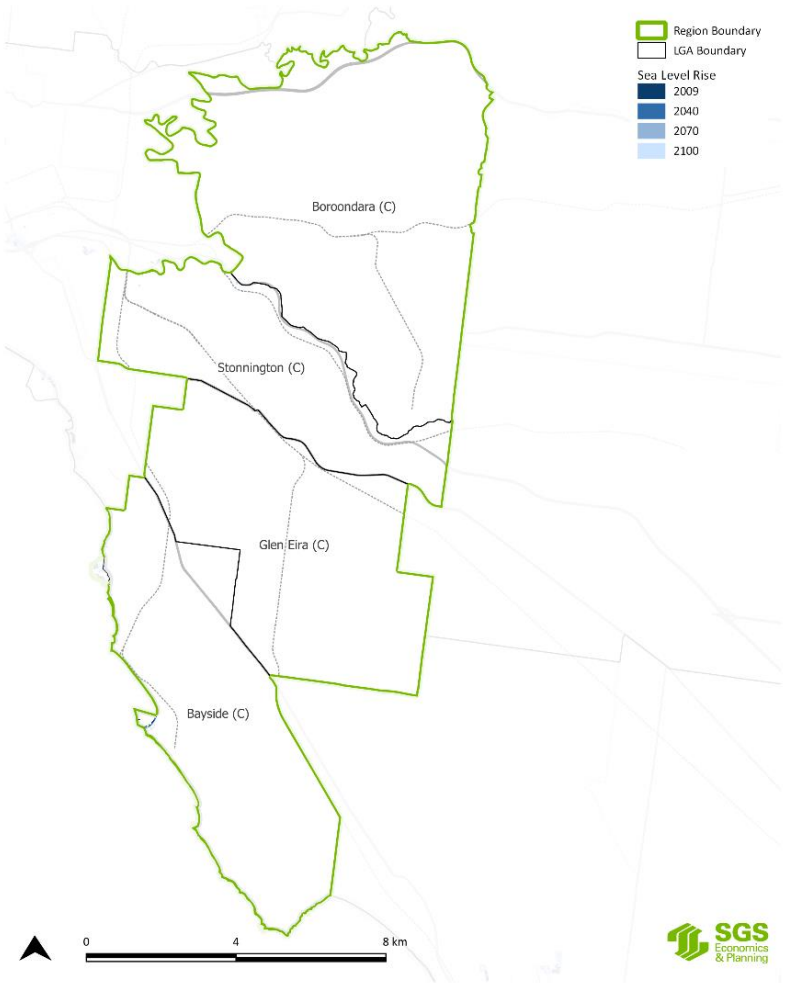
Source: (Department of Environment, Land, Water and Planning, 2018d) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Data used is considered to the latest public dataset available. Nuisance and localised sea level rise may extend beyond what is shown by the data.

FIGURE 119: PROJECTED AREAS INUNDATED, SEA LEVEL RISE WITH STORM SURGE (2009-2100)



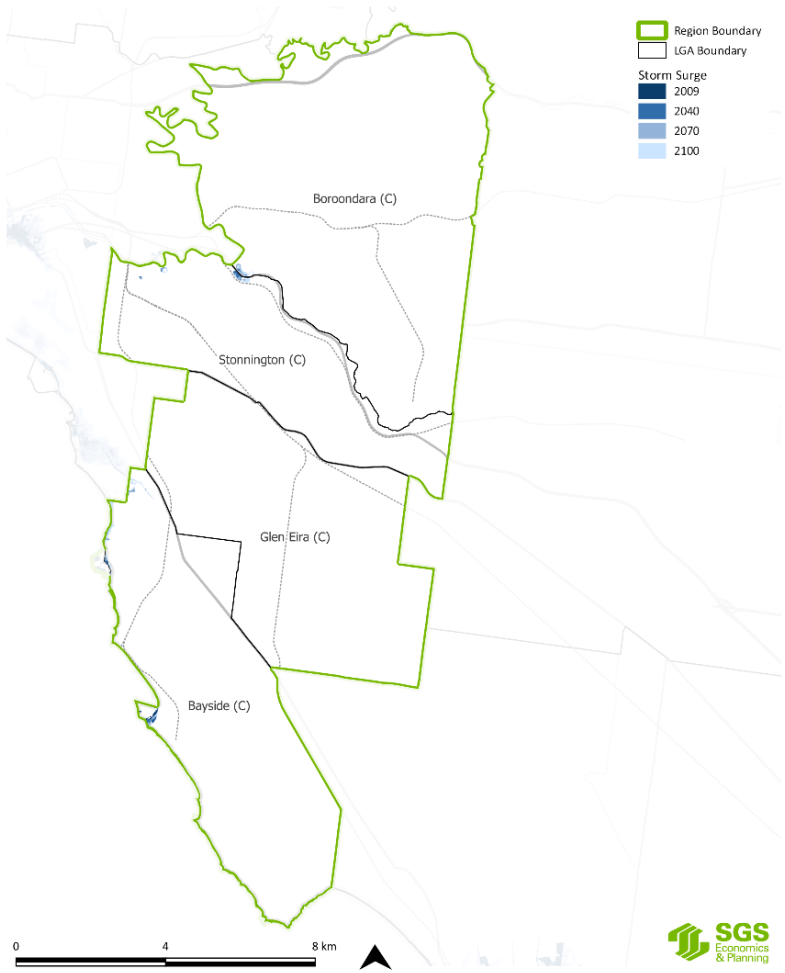
Source: (Department of Environment, Land, Water and Planning, 2018e) *VLUIS data has been used as hazards are primarily in the outer areas of the region (where the VLUIS data better describes land use). Data used is considered to the latest public dataset available. Nuisance and localised sea level rise may extend beyond what is shown by the data.

FIGURE 120: AREA AFFECTED BY PROJECTED SEA LEVEL RISE (2009-2100)



Source: (Department of Environment, Land, Water and Planning, 2018e) Data used is considered to the latest public dataset available. Nuisance and localised sea level rise may extend beyond what is shown by the data.

FIGURE 121: AREA AFFECTED BY PROJECTED STORM SURGE (2009-2100)



Source: (Department of Environment, Land, Water and Planning, 2018e) Data used is considered to the latest public dataset available. Nuisance and localised sea level rise may extend beyond what is shown by the data.

Bushfire

Bushfire risk is relevant for parts of Melbourne. There are greater risks for areas with certain classes of vegetation that burn more easily. The Bushfire Management Overlay is a planning control applied to land with the potential to be affected by extreme bushfires. It does not specify which areas are at more risk although it is expected that highlighted areas will be at more risk as climate change occurs.

Figure 122 shows that there is no area at risk of bushfire in the Inner South East Metro Region.

FIGURE 122: BUSHFIRE RISK OVERLAY (2016)

Source: (Department of Environment, Land, Water and Planning, 2018b)

Urban heat island effect and Heat risk

Rising average temperatures and more extreme heat are some of the impacts felt by humans because of global warming. Further, as we build infrastructure and remove natural environments, heat is absorbed, and land temperatures rise.

The urban heat island effect (UHI) – a measure of the deviation of urban temperature relative to a non-urban baseline (Sun et al., 2018) – is one example of changing conditions. UHIs can affect the longevity of infrastructure, energy demand, health and water quality. Figure 123 shows the distribution of UHI in the region in 2014.

- Most areas experience the UHI effect.
- There is little variation across the region.

Work completed by Sun et al. (2018) correlates vegetation (including tree canopy data) to UHI. They find that tree cover structure is a useful predictor of variation in UHI. Grass and shrub vegetation are poor predictors of UHI.

The impacts of heat increases, such as that posed by UHI, can be described by a heat vulnerability index (HVI). The HVI consists of three input layers: heat exposure, sensitivity to heat, and adaptive capability (Sun et al., 2018).

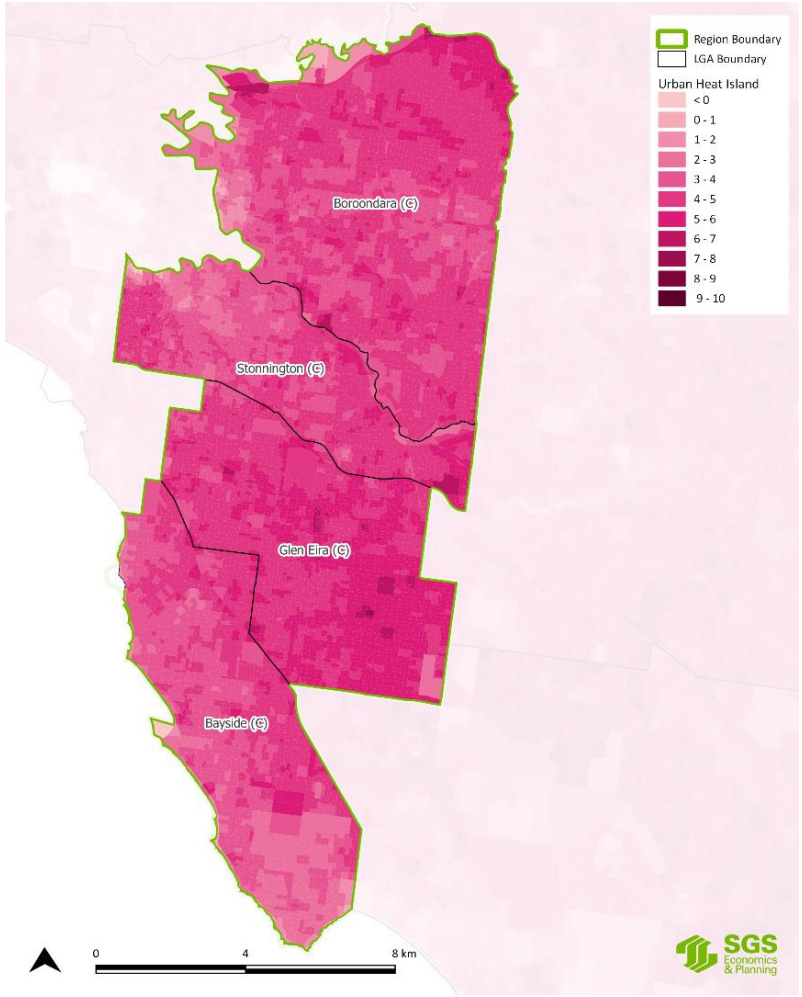
Figure 124 shows the spatial variation of the HVI in the region.

- Areas of vulnerability exist throughout the region yet the most vulnerable areas are concentrated in the City of Glen Eira.
- The HVI does not always overlap high UHI areas because other components of the HVI such as sensitivity to heat and adaptive capability can offset urban heat islands (and heat exposure).

Separate to work completed by Sun et al. (2018), Loughlan et al. (2013), describes areas that are vulnerable and how this is related to ambulance call outs on hot days. Loughlan used several environmental, health and demographic variables to develop the vulnerability index for heat stress by post code.

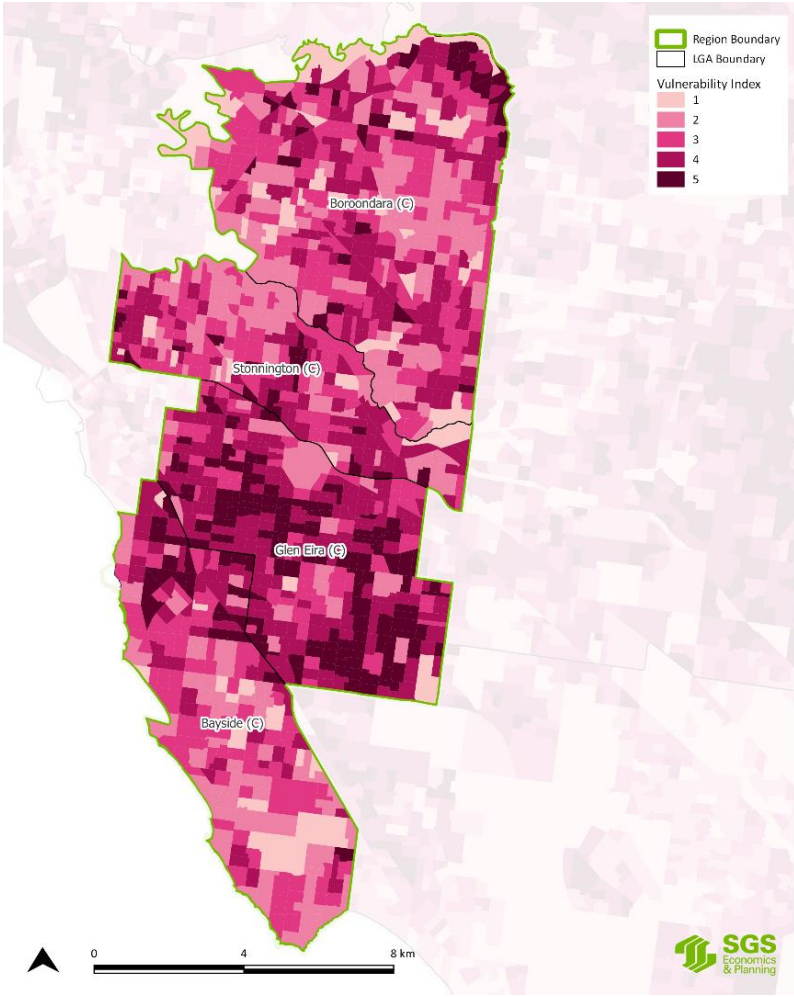
Analysis showed that heat vulnerability correlates well with ambulance call outs on extreme heat days. It also shows that ambulance call outs are high in some coastal locations, which could be related to visitor numbers during hot periods.

FIGURE 123: URBAN HEAT ISLAND EFFECT (2014)



Source: (Sun et al., 2018) * Mean UHI in degrees Celsius shown in legend

FIGURE 124: HEAT VULNERABILITY INDEX (2014)



Source: (Sun et al., 2018)

Contaminated groundwater and other sites

The EPA monitors sites for contamination and other risks, particularly in light of the potential impacts on health. At the time of writing this report there were 10 sites listed on the EPA priority register in the region.[15] Key reasons for being on the register include:

- former and current industrial sites that require management and or clean up
- former landfill sites that require clean up
- current service station that requires ongoing management
- illegal dumping that requires clean up.

Figure 125 only provides a snapshot of contamination in the Inner South East Metro Region. The available data does not include all sites known or likely to be contaminated. Collection of EPA priority site data over time may show areas that are more inclined to be contaminated and the time taken to manage them to reasonable levels.

Concentration of contaminated groundwater sites (also shown in Figure 126) can inform understanding how economic activity is associated with the health of the environment.[16]

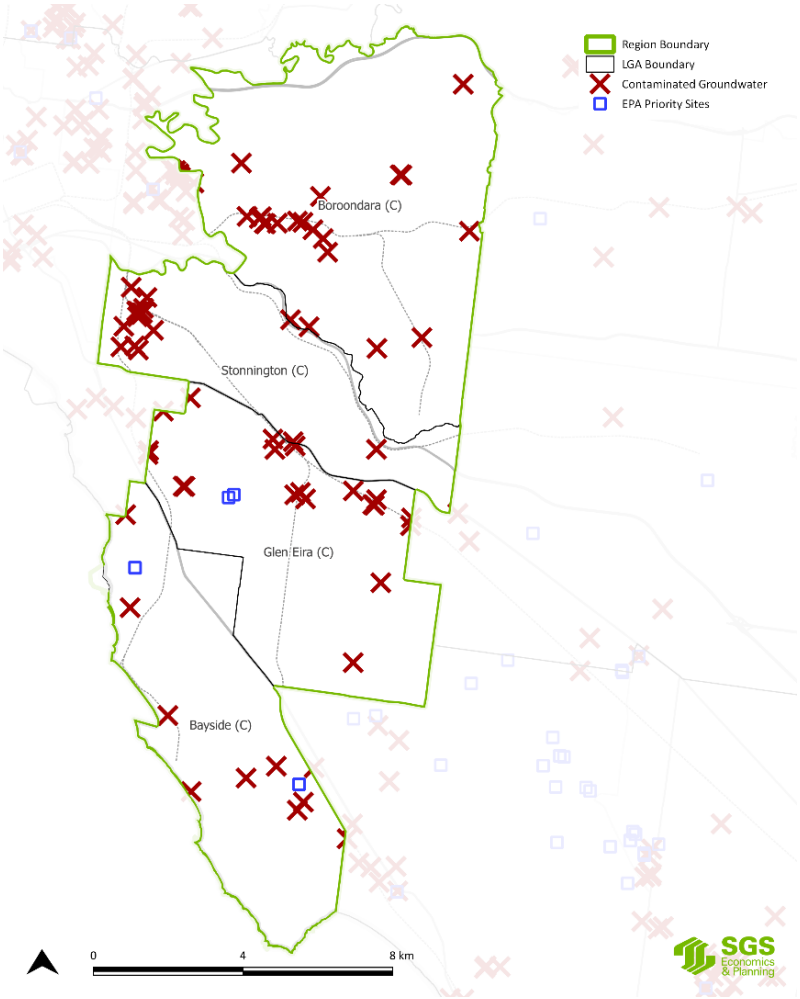
Together, the spatial data shows that contaminated sites are grouped together and are likely to be where industry has previously operated.

Soil and groundwater contamination must be addressed and remediated to acceptable levels before land can be changed to more sensitive uses such as residential.

[15] http://www.vvg.org.au/

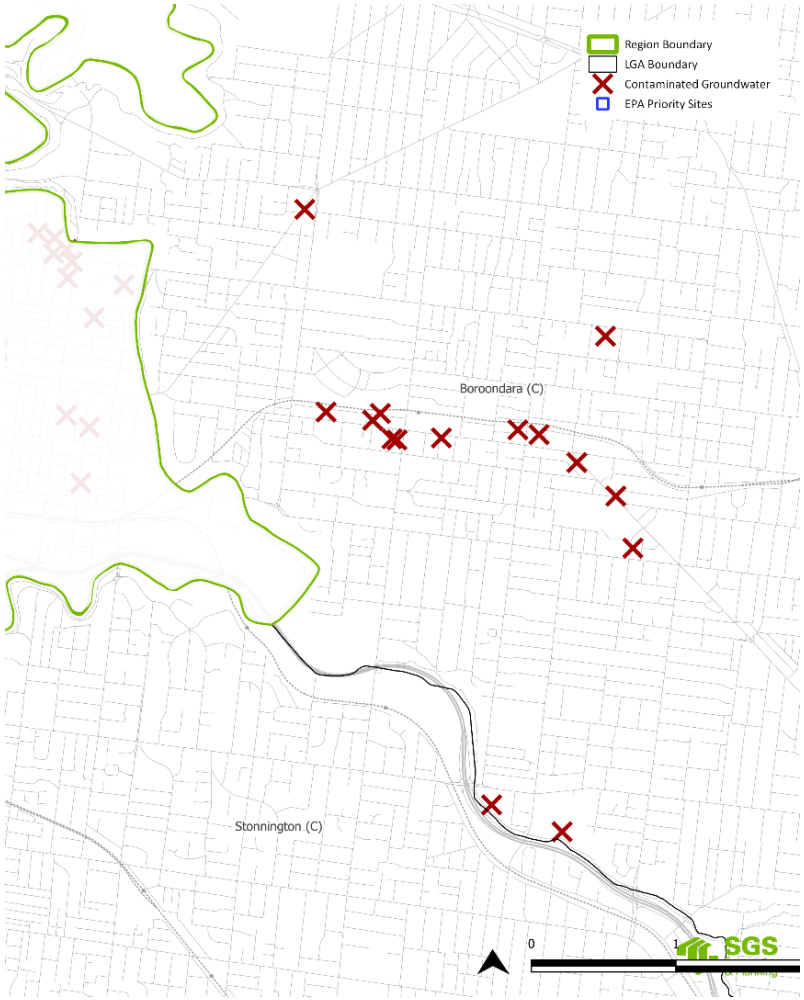
[16] Groundwater quality restricted use zones data used

FIGURE 125 EPA PRIORITY SITES AND CONTAMINATED GROUNDWATER SITES (2018)



Source: (EPA Victoria, 2018a, 2018c)

FIGURE 126 EPA PRIORITY SITES AND CONTAMINATED GROUNDWATER SITES, ZOOM, (2018)



Source: (EPA Victoria, 2018a, 2018c)

6.5 Environmental flows

From an economic perspective, much activity relies on natural capital along with human and physical capital to produce goods and services. For example, materials such as coal, timber and gas are essential in generating energy for almost any economic activity. Other basic needs such as food, water and shelter, all rely on the environment.

Further, the environment provides a host of other services, not recognised as being a part of the economy, that affect human wellbeing. This includes:

- provisioning services – likely covered as an input into economic activity
- regulating services – including carbon sequestration and flood regulation
- recreational and cultural services – including spiritual experiences and a sense of belonging.

Such services are often difficult to measure. They are sometimes not incorporated into decision-making and when they are, they may not be represented accurately.

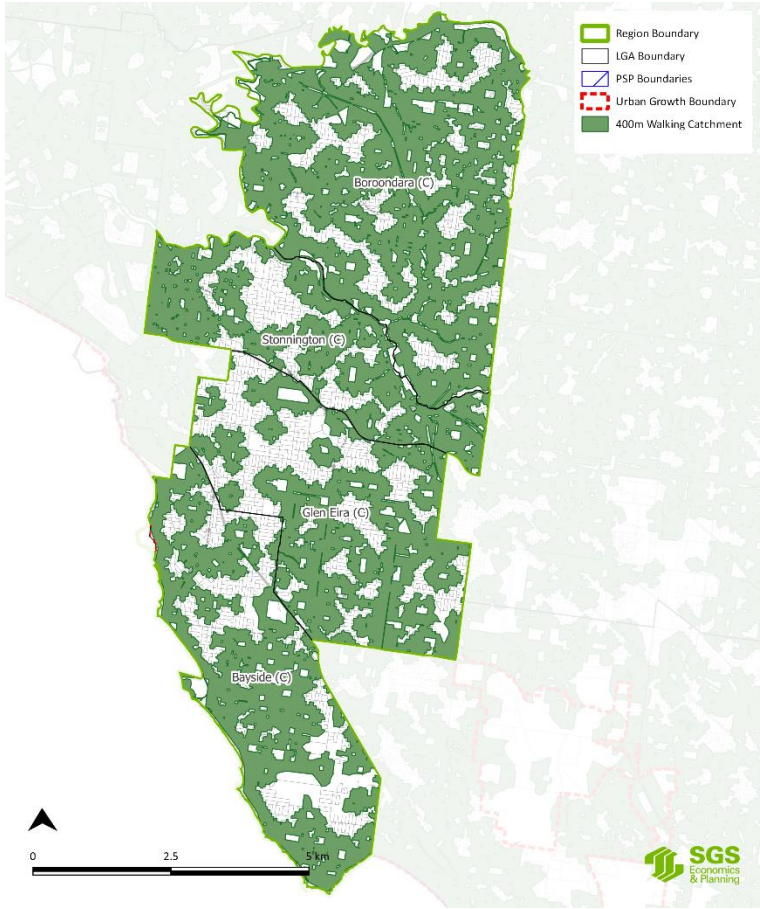
Economic activity generates residuals such as waste, wastewater, air pollution, greenhouse gas emissions, and the environment is typically a sink for these flows. For example, effluent/wastewater is typically discharged into other water bodies, and carbon flows to the atmosphere. The environment can actively or passively process these residuals. Water waste is processed by the next ecosystem to some extent, while solid waste can consume space. The management of residuals and areas tasked with dealing with them can affect the condition of environmental assets and their capacity to provide services that benefit humans.

Access/use of green space

Green space and parks contribute to health, liveability and biodiversity outcomes. Figure 127 shows areas within the Inner South East Metro Region that are within 400 metres of the nearest public open space feature. This is a sub-section of the data presented in Figure 97. It is evident that:

- a large percentage of the area has access to open space
- residential areas in Glen Eira and Stonnington LGAs do not have access to green space within a 400-metre walking catchment.

FIGURE 127: 400 METRE WALKING CATCHMENTS (2017)



Source: (Victorian Planning Authority, 2017b)

Further, the diversity of open space can provide the population with greater choice and benefits.

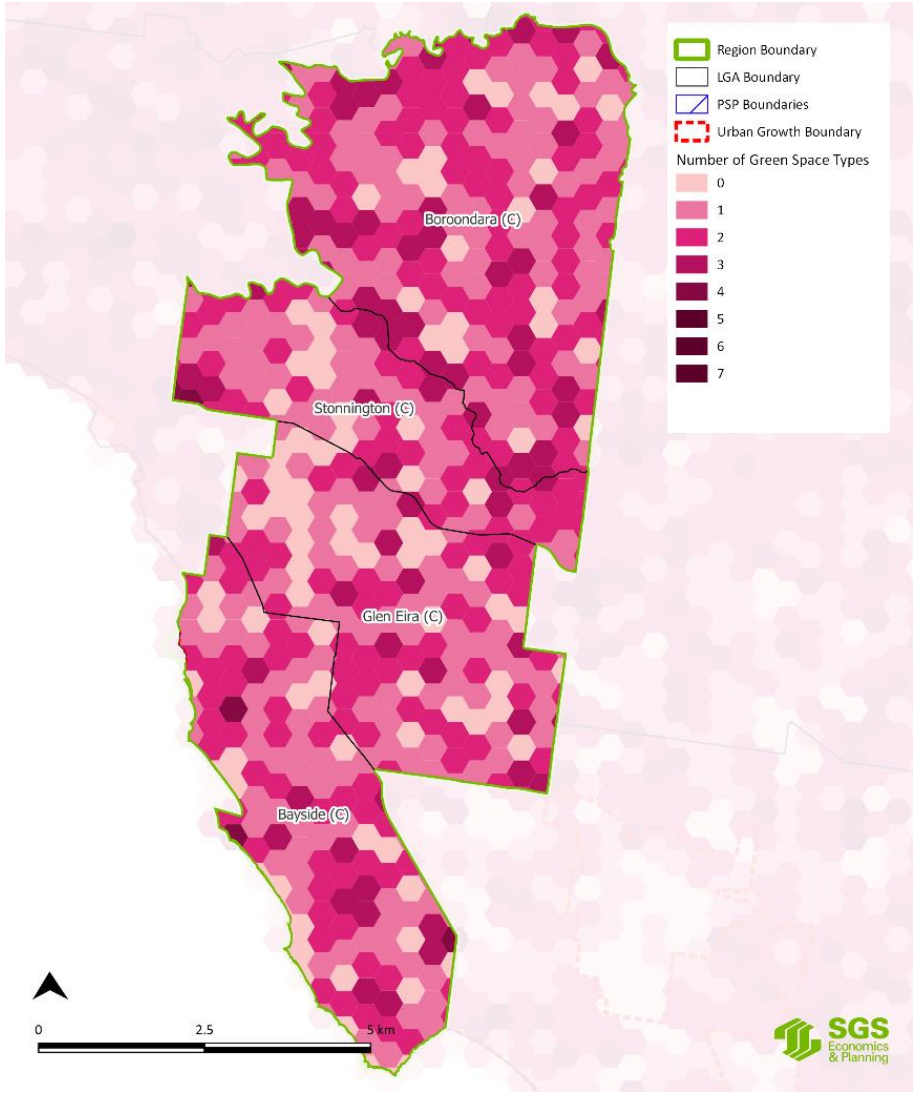
Table 20 shows the percentage of households with access to the open space type. There are six different types of open space in the table, with private open space removed from the classes described earlier in the report as it is already inaccessible. Approximately 85 per cent of the Inner South East Metro Region has one type of green space accessible within 400 metres. The region is one of the poorest in terms of accessibility to at least one type of open space within the urban growth boundary. Table 20 further shows how the diversity of accessibility to the six types of open space varies across the Inner South East Metro Region. Access is relatively diverse in each of the LGAs.

TABLE 20: PERCENTAGE OF REGION WITH GREEN SPACE WITHIN 400M BY GREEN SPACE TYPE (2017)

Open space Typology	UGB (excl. New Growth Areas)	All
Public and Built	0%	0%
Public and Green	66%	66%
Public and Mixed	33%	33%
Restricted and Built	1%	1%
Restricted and Green	2%	2%
Restricted and Mixed	42%	42%
Total with access to at least 1 category	85%	85%
No access to any category	15%	15%
Total	100%	100%

Source: (Victorian Planning Authority, 2017c) Note: open space definitions are the same as those used in figure 99. Note that sum of each open space typology does not equate to the row named total with access to at least 1 category field. This is because one hex could have access to two of the open space types. Therefore, it does not equal the sum of its parts.

FIGURE 128: NUMBER OF DIFFERENT GREEN SPACE TYPES ACCESSIBLE WITHIN 400M (2017)



Source: (Victorian Planning Authority, 2017c)

Visitation to parks

Accessibility can help to alleviate barriers associated with public health benefits. Accessibility does not, however, mean that public benefits will be achieved. For instance, human behaviour and time are other barriers to public health benefits.

Figure 129 shows the percentage of the population in each of the LGA that visits green space at least one time a week.

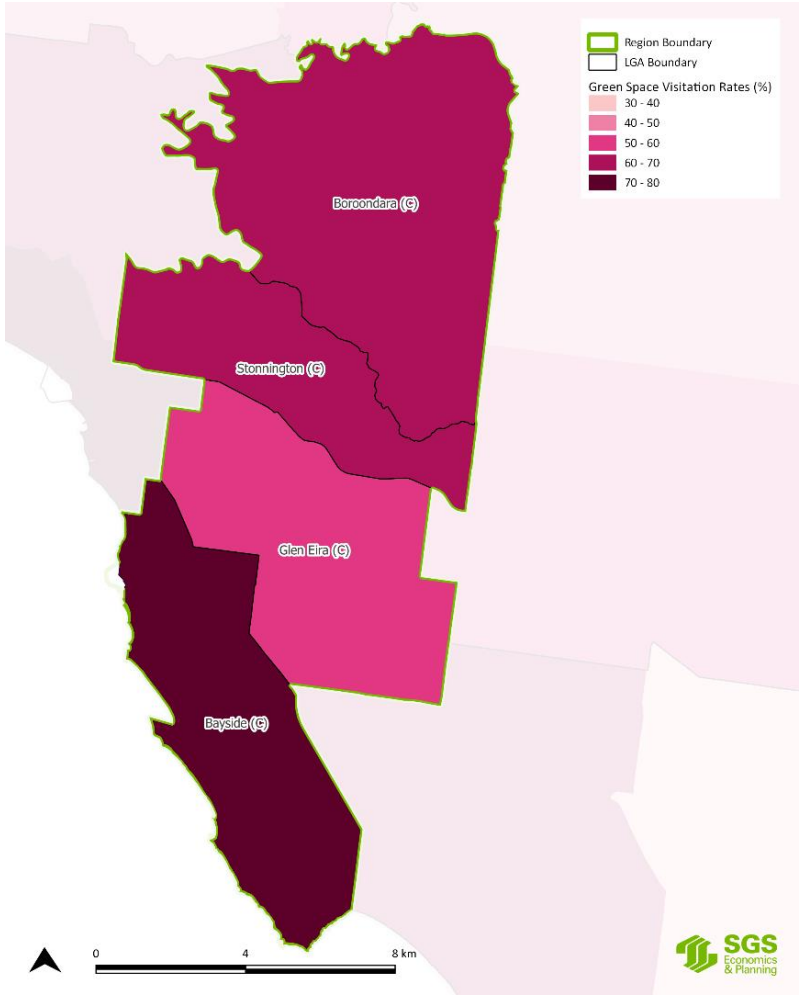
- A relatively large percentage of residents in the region visit green space at least once a week.
- City of Bayside has a high percentage of residents visiting green space.

Concurrent analysis of the accessibility map and visitation map shows that despite having similar accessibility, a lower percentage of residents in the City of Glen Eira visit green space at least once a week when compared to the region.

There could be several reasons for this, including the quality and attributes of parks and perceptions of safety. Further research is required to determine the factors that contribute to this difference.

There are no Park Victoria parks in the Inner South East Metro Region that are ranked in the top 10 visited parks, which means there is no relevant data for this region

FIGURE 129: % OF RESIDENTS VISITING GREEN SPACE (1+ TIMES A WEEK) (2011)



Source: (Victorian Health Promotion Foundation 2011 - 2014, n.d.)

Water security

Urban water supply across the Inner South East Metro Region is managed by South East Water, Yarra Valley Water and Melbourne Water (see Figure 130).

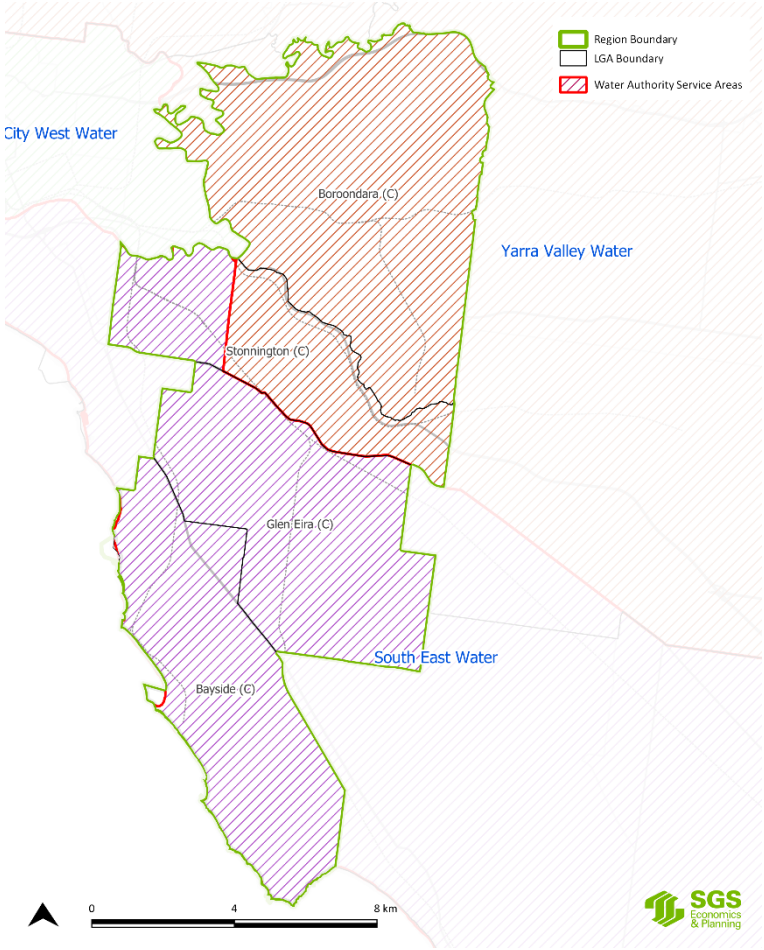
Yarra Valley Water is serviced by Melbourne Water, which supplies bulk water. Yarra Valley Water has bulk entitlements at Greater Yarra System, Victorian Desalination Plant, Goulburn System and River Murray.

Most of the drinking water supplied to South East Water customers (currently around 156 GL per year) comes from the forested catchments of the Yarra and Thomson rivers via Cardinia Reservoir. Other water will soon be supplied from the Victorian Desalination Project.

Water authorities consider multiple scenarios when forecasting demand and supply of water. Under a high climate change and high demand scenario, it is estimated that South East Water's water supplies will be secure for the next 10-15 years. Under a medium climate change and medium demand scenario water supplies will be secure until 2047. A low demand, low climate change scenario results in no shortfall by 2065. Factors affecting these scenarios include population growth, climate change and efficiency.

Under a high demand, low supply scenario, Yarra Valley Water requires augmentation of water supplies by 2031; medium demand and medium supply results in augmentation by 2053; and low demand, high supply scenario results in no shortfall by 2065

FIGURE 130: URBAN RETAIL AND REGIONAL WATER AUTHORITY SERVICE AREAS (2016)



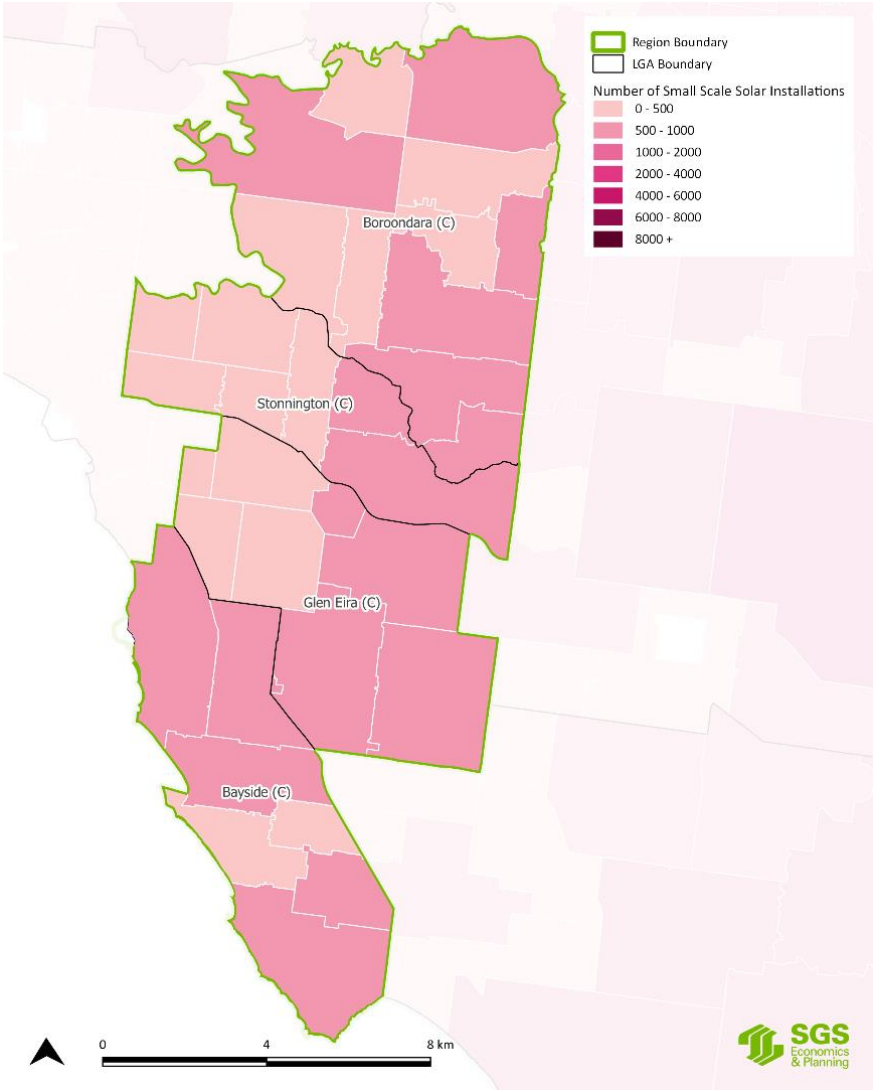
Source: (Bureau of Meteorology, 2015)

Future large-scale investments in water supply infrastructure are likely to occur in both water authority regions to sustainably and cost-effectively service growth in the areas that they service.

Renewable energy

Renewable energy will emerge as traditional resources are depleted and the impacts of climate change increase. Figure 131 shows the number of small-scale solar installations from 2001 to 2016. There have been a relatively small number of installations since 2001.

FIGURE 131: SMALL SCALE SOLAR INSTALLATIONS (2001-2016)



Source: (Clean Energy Regulator (Commonwealth of Australia), 2018)

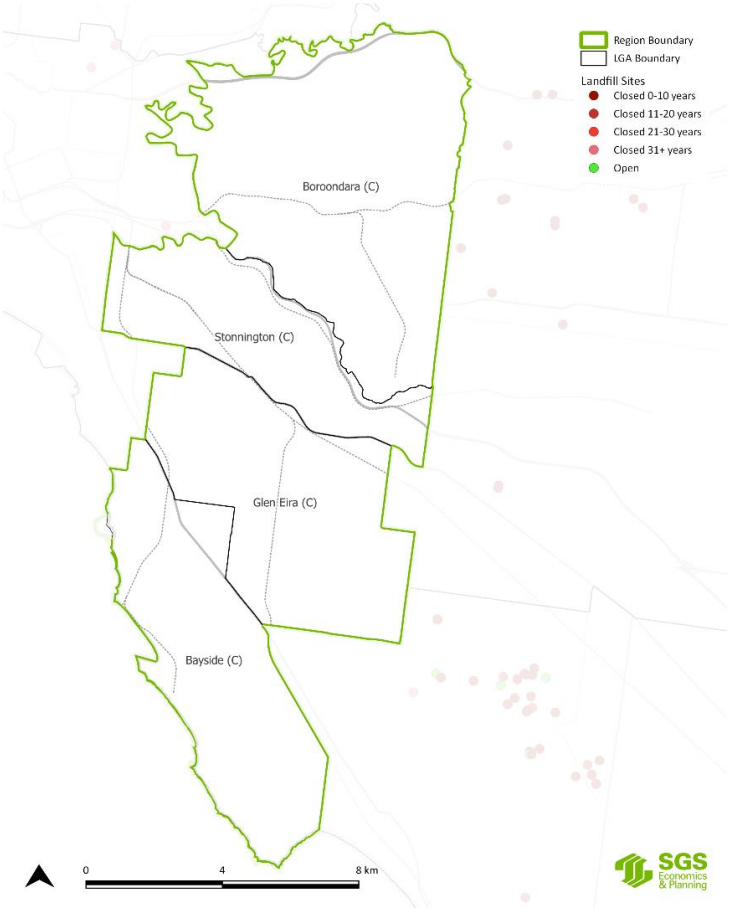
Waste

There are no waste management facilities across the Inner South East Metro Region (Figure 132).

Kerbside garbage is one indication of the quantity of flows from the economy to the environment and the requirement on the environment to process the waste. Figure 133 and Figure 134 show that:

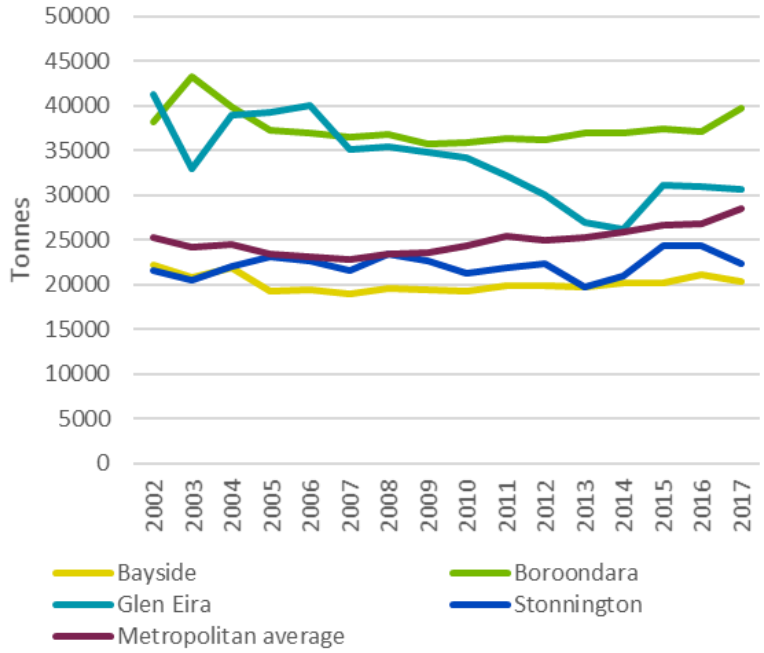
- Waste in the region has remained relatively stable.
- The City of Boroondara is the main contributor to the region's waste.
- Waste in the City of Glen Eira decreased since the early 2000s.
- All LGAs contribute a similar amount of kerbside garbage per capita, with the City of Boroondara the largest contributor and City of Stonnington the lowest contributor in 2017.

FIGURE 132: LANDFILL SITES (2018)



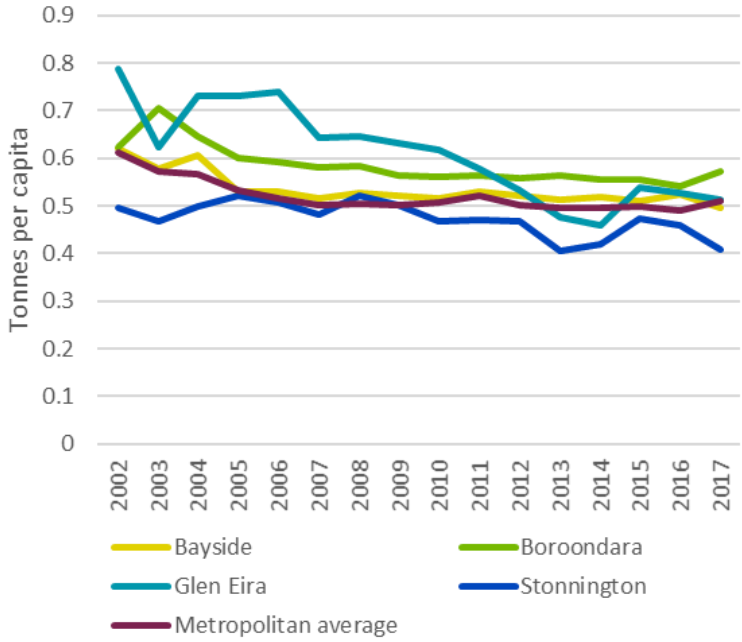
Source: (EPA Victoria, 2018b)

FIGURE 133: KERBSIDE GARBAGE (2002-2017)



Source: Sustainability Victoria

FIGURE 134: KERBSIDE GARBAGE PER CAPITA (2002-2017)



Source: Sustainability Victoria

Wastewater

Discharge of wastewater from treatment plants is contributes the environmental footprint of the Inner South East Metro Region. The condition of assets such as Port Phillip Bay are affected by the flow of wastewater.

Approximately 130,000ML of wastewater was generated in Yarra Valley Water's catchment in 2015-2016. Fifty-four per cent is transferred to Melbourne water for treatment at its Western Treatment Plant while 38 per cent is transferred to Melbourne water for treatment at its Eastern Treatment Plant. The remaining eight per cent is received and treated by treatment plants owned and operated by Yarra Valley Water.

South East Water currently removes around 121 GL of wastewater per year. Eighty-eight per cent of this is treated at the Eastern Treatment Plant and Western Treatment Plant (operated by Melbourne Water) with 12 per cent treated at South East Water's eight water recycling plant.

Respectively, the Western Metro Region report and the Southern Metro Region report describe the role of the Western and Eastern Treatment Plants in treating the wastewater.

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